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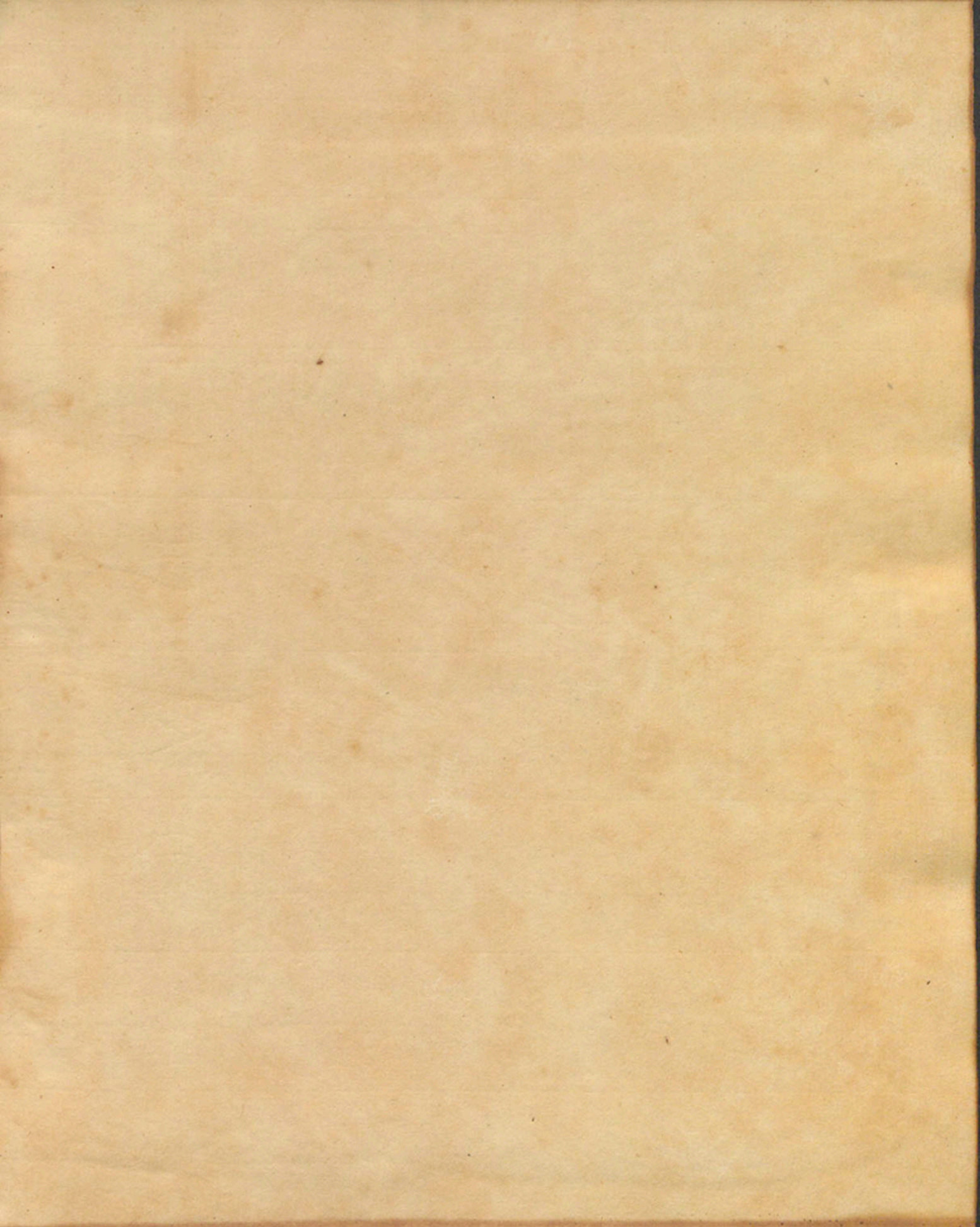




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Lectures  
upon  
the Practice  
of  
Physick  
by  
W.<sup>m</sup> Cullen. M.D.

Edinburgh 1769  
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Class I. Pyrexia.

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Order I. Febris.

Part 2.



# 1 Upon the Remote Causes of Fever

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The Remote Causes of Fever I suspect have been altogether mistaken or little understood. — Boerhaave and Lucmai sought for them in powers that Stimulate the body, but we shall prove the occurrence of a distinct set of Causes.

Fever is frequently Epidemic and often Contagious, and from these circumstances Physicians have concluded that there was a peculiar matter in the Atmosphere suspended in a state of Vapour, and introduced into the body. — As these were supposed  
unnatural



## Remote causes of Fever.

2

unnatural to that Element they have been considered as extraneous matters or impurities, called Miasmata.

A distinction of terms however is here necessary.

When we observe a matter arising from the human body under disease which being applied to another in health produces the same species of disease, we call it a Contagion. But when the matter is supposed to arise from a degeneracy in the Air or from bodies not labouring under a disease we call it Miasma.

### Miasmata.

There may be many & various, nor can we refuse the possibility of such varieties; we are however ignorant of all but one Species, and from the Universality & constant operation of this we are suspicious of the existence of others. This is

The Miasmata of Marshes acted on by a certain degree of Heat, and they are always the product of the concurrence of Moisture and heat.

1. It is not Moisture alone, for this however abundant is of itself insufficient to produce fever.
2. Heat alone without moisture is ineffectual, for Men will not be subject to the disease unless they are



are exposed to the marshy exhalations, and on this plan Dr Lind forms his Practice of preserving Europeans from Diseases.

3. They are not produced by the operation of heat on a pure moisture, for men live healthy upon the Sea & near grounds that are covered with water.

4. It is probable the Miasmata are exhaled from the Earth under the operation of heat & moisture.

The yearly phenomena of Contagion in Egypt disappear, and the Country becomes healthy from the inundations of the Nile; & the more complete the afflux of waters are, the less are the Inhabitants affected with disease; on the retrocession of the waters the Epidemics return. — Senae gives an instance of a City surrounded by a lake into which every kind of filth was thrown in that yet continued to be healthy while the water was abundant in the lake, but this being evaporated the exhalations from the mud emerged into the air & produced a violent Epidemic. Hence Miasmata have been supposed to be the Effluvia of putrid Animal matter exposed to the action of heat, but if this is admitted it must be allowed that it is Animal matter of a peculiar kind, for many great Cities that abound in various putrescences are perfectly healthy if they are not surrounded with



with Marshes. Whether therefore this foetrescency is of an Animal or Vegetable nature is uncertain, but where these effluvia abound the putrefaction of Animal substances is considerably expedited. The Marshy exhalations must be more concentrated in light hot air, especially in unventilated places, as on the contrary by being freely diffused in the Atmosphere they are rendered more innocent.

The Marsh Miasmata always produce fever, & perhaps a fever of one kind only; they produce Epidemic-Intermittents-Tertian, & Quartan; but as the latter depend on the former and occurs in the same Epidemic from the cause being modified by the accession of cold, I consider the fever as Tertian.

All Tertians are extremely connected, & as they all appear in the same Epidemic from Marshy Effluvia we presume they arise from the same cause differently modified, and from this we may infer a sameness of disease. The difference will depend on the degree of power in the cause, and will be more powerful the nearer it approaches to the continued form, and the latter will prevail as the contagion is more powerful & the Ventilation less.

From



From the observations of Lind it is probable that the Remittents of the East and West Indies, Guinea, Hungary, Denmark &c, are the same diseases arising from the same causes.

The same was observed by Mercatus in Spain, Torti in Italy, Valcarenghi in Cremonese, Pugati in Veronese, Ceghorn in Minorca, Senac in France, Sydenham and Morton in England, and the same with the Autumnal Febrilians in all Countries.

We here then have reduced these diseases to a common cause, and we conclude that the Miasmata producing fever are of very little variety, merely differing in the different degrees of activity.

### Contagion.

This is a matter that always arises from the human body, and productive of the same disease that took place <sup>in the</sup> body from whence it arose; perhaps it was originally a Miasma modified by the body and being again exhaled becomes a Contagion. It has been supposed that Contagions were diffused



diffused in the Atmosphere; but latter Observations shew that Miasmata & Contagion when diffused in the Air to any great distance from their source lose their peculiar nature, and, whether in consequence of Mixture or diffusion, become perfectly innocent.

If we consider the number of burning & fermenting bodies, the varieties of poisonous exhalations from the Earth, we should every where expect an unwholesome impregnation of the Atmosphere; but by diffusion they are rendered perfectly harmless, and like Contagions are only infectious near their source, near the body of the patient. Contagions rise with difficulty from the surface of the Earth, but are concentrated to the surface of the body & adhere tenaciously to the garments of the sick. This explains how Contagions are communicated, and from this adhesive property they are conveyed to a great distance & bring the disease into foreign countries. It is said that the Small pox was communicated to the Indians of America by an old blanket sent from England. In a kind see innumerable facts of the same kind.

See



The manner in which Contagions are generated in the human Body is not known. They are supposed to arise from ferments, but the modification of these we are ignorant of. The difficulty is increased by the supposition of their being of great variety, but these on Examination will be found reducible to a few.

Of those producing fever some are very uniform in their effects, and attended with the same symptoms under all the varieties of age, sex, constitution and climate. Of this kind are the Small pox, Measles, Chincough, & others. Such we call Specific Contagions. This would assign a palpable difference of Contagions, which yet are but few; they generally produce Exanthemata and Profluvia, but no great variety is distinctly observed, and in the Systems of Sauvages, Linnaeus and Vogel, who have been at pains to collect the whole, we find but ten genera in the order Exanthematica, and there are few among the Profluvia and few also among fever, & we shall find occasion



to limit them, if we consider them in another view.

It has been supposed that not only particular *Exanthemata* are necessary to characterize specific *Contagions*, but also that peculiarity must be taken in, that they attack the same person but once during life; this may be applicable to the Small pox, measles, but is dubious with respect to the plague, dysentery &c. In those *contagions* that are supposed specific, a variety of circumstances have an influence in determining their effects, & therefore we may with probability doubt whether the whole is not one common contagion under different modifications.

It is known that the *effluvia* of the human body, when concentrated & little ventilated & under the operation of heat, become extremely pernicious & produce the Jail or Hospital fever; but this source of Contagion tho' of powerful activity, may under different modifications produce a variety of diseases, & this is the most general source of Contagion. Hence then our Remote Causes of fever are reduced to two, The Marshy Effluvia & the Jail or Human Effluvia; whether the former is productive of Contagious diseases has been disputed, but without any foundation; the latter however is the chief source of Contagion.

*Exanthemata*



Miasmata of Marshes may give contagious diseases as appears from the Dysentery, which seems to be owing to an union of the Marsh effluvia with a particular fluid in our system, and by the modification that ensues the disease becomes contagious. We may therefore refer the whole of Contagions to a few common sources, & this, as in every other case, it is useful to attempt a generalization, which if it happens to be faulty is easily corrected.

We have said that Tertians seem to be the fundamental genus of Intermittents, & the Typhus is the principal genus of Continued fevers.

On the subject of Contagions we have simplified exceedingly, a method that is always better to follow than to give a confused jumble of particulars.

I hinted that specific Contagions were perhaps originally founded on the general resource, viz, Human Effluvia operated on by heat, only, under specific modifications. From the consideration of human effluvia as Sedative & Putrescent we see how they will apply to the several cases of Typhus, Putrid or not putrid.

Other remote causes concur with these.

1. Cold. This Operates, as

(Sedative)



1. Sedative.

2. Stimulant.

3. Astringent, or Tonic.

1. Sedative. As Heat is the means of exciting & supporting Animal life, so Cold must have an opposite effect, & in an intense degree it entirely destroys the Nervous power.

2. Stimulant. When it is applied in a less degree & its application is transitory, it especially stimulates the Sanguiferous System so as to produce an increased determination of Blood to the part it effects; how far these are connected I have before been sufficiently explicit about; whether it stimulates or only does it by increasing reaction by a Sedative effect, the fact shews it to be a proper cause of Fever & Pyrexia.

Cold acts principally as a Sedative & its Stimulus is indirect; this is sufficiently confirmed by its inability to produce fever except when the System has been previously debilitated.

3. Astringent. Whether by simple constriction or any other affection, it certainly produces an increased tone of the Arteries on which Phlogistic Diathesis depends. The effects of Cold in producing



ing Pyrexia <sup>appear</sup> in three ways.

1. By its Stimulant & tonic effect it produces Rheumatism & Inflammatory disorders of other kinds, such are the diseases of Cold climates & seasons.

2. When it acts more purely as an Astringent on the surface, it necessarily determines the fluids to the more internal parts; this is generally in the Mucous glands of the Fauces & Bronchia; the determination to these glands is sufficiently known, & if these give a passage to the perspiration they will be more liable to congestions when the pores of the skin are constricted & diminished in their capacities; a further connection appears from the many Ecthymata which primarily affect the one, are found to affect the other.

The 2<sup>d</sup> Effect then is Catarrh.

3. By its general operation in producing Pyrexia, it may concur with other causes, & produce proper fever; the concurrence of Cold is necessary in almost all the cases of fever, hence perhaps the reason of Sydenham's observation that cold destroys more Men than the Sword, Plague, & Famine.

I doubt whether Cold alone ever produces any other fever than the purest Synocha, for where we  
most



most distinctly observe the operation of Cold it produces Inflammation and Catarrh; but in producing <sup>fever</sup> Cold concurs with other causes.

In all countries within the Temperate Zone there is heat sufficient to raise Marsh Effluvia, and this appears from Epidemics of that sort raging in every place within those limits; but, besides, every part of the Earth that is moist exhales effluvia in some degree, also the poorer people who live in a filthy manner & seldom change their garments may give rise to the Jail Effluvia; we see then that both these and those of the Marshy kind are so common that we wonder they do not more frequently occasion diseases.

This power is explained by what the fact seems to lead to, that frequently these Effluvia are not sufficiently active alone to produce fever or to bring on an Epidemic, yet in concurrence with cold are sufficiently powerful, at least to give Sporadic fevers. Poor people are always observed on this account to be most afflicted with Epidemics.

The Cold alone is inadequate to the production of Fever, yet it very generally occurs as an exciting cause, & modifies the fever, generally giving



giving it the form of a Synocha, & hence therefore this is most frequent in cold climates.

2. Excess in Venery. Diemerbroek observes that new married persons are most violently attacked by the plague at Nimeguen.

3. Debauch in drinking

4. Grief, Fear, State of the Stomach &c.

These have been always esteemed causes, but like cold probably never produce fever alone but in concurrence. This may be either when the Miasmata are not sufficient to give fever, but are assisted by these; or, 2<sup>d</sup>, when they have debilitated the body and cold becomes sufficient to excite fever.)

The Premote causes of fever are to be referred to Miasmata & Contagion; another however must not be omitted, the operation of cold, which may sometimes possibly give a proper fever, but generally concurs with Miasmata & Contagion. Other causes are to be mentioned which induce the Debility, and hence co-operate either in increasing the Debility with Miasmata & Contagion, or giving rise to cold operating, and producing Fever. A remarkable cause of this sort is Fear.

This very evidently weakens the system & affects the



the circulation so that the blood is not propelled to the extreme vessels, whence is the cause of the cold & paleness of the extremities, which often proceeds to sudden death; but when the fear is moderate it is succeeded by a reaction & all the symptoms of fever. Hence we observe that Fear has the effect of exciting debility & Spasm, & may possibly produce fever of any degree of violence & duration. This however is not very common, but it proves a concurrent cause with Miasmata & Contagion, whence has a share in the Epidemics which are most liable to affect persons of the greatest timidity; this has given rise to the supposition that Fear was the actual cause of Contagion. It is observable that people of the same country & family are most commonly seized by Epidemics, because the grief for the loss of their connections induces Fear, whence disposes them to be affected by the Contagion.

Another head of Remote causes may be referred to a particular State of the Stomach.

A febrile state is more or less necessary to the Stomach in the process of digestion, and this will depend on the quantity or quality of the Aliment introduced; hence certain Aliments may be the causes



causes of Fever either alone or in concurrence with other causes, and it has been observed that certain kinds of food have renewed Intermittent Fevers, but the reason why vegetables, fish, &c. more readily produce this I shall not attempt to explain. —

But a question here readily occurs, whether the fevers produced from those causes, Fear &c. (especially if we conceive them to operate singly) are to be referred to the genera we have laid down, or do they constitute a separate & distinct Order of the Pyrexia? We need not be anxious about determining this, for they so generally concur with Miasmata & Contagion as seldom to give a difference.

The *Causae Singulares* of Boerhaave, which are analogous to our Remote Causes, act by a direct Stimulant power; some of these indeed, as heat &c. give fever; but this is a consequence of their first inducing debility, and thereby rendering the System more favourable for the operation of Cold, Fear, Miasmata &c. — From all that has been said then it appears that Miasmata & Contagion are the chief, if not the only, causes of fever, and other causes are never considerable but when they act



act in concurrence with these.

The reason why they do not act upon every person seems to be owing,

1. That the action of Miasmata & Contagion will be according to the degree of their power, as they are the product of a peculiar fermentation they may like other ferments have different degrees of activity.
2. Its being in different quantities, or being concentrated in a given space.

1. A cause of its increase, both in quantity & quality, is Heat, and hence the quantity & activity of the matter will be proportioned to the nature of the climate.

2. Moisture. Heat alone however will be insufficient unless it finds a proper subject to act upon, & hence Miasmata are only produced in humid grounds that are acted upon by heat, but whether mere moisture on any part of the Earth's surface concurring with Heat is able to produce the noxious Effluvia, or whether some peculiar putrescency is not essential to their production, is doubtful.

It appears in favour of the last that putrid animal substances occur on the retreat of Rivers that have overflowed, but in favour of the former it appears that



(a) Marsh Miasmata give Intermittents & their varieties;  
Human Effluvia, Typhi.



that rains poured down from barren mountains upon inundated plains, produce on the exsiccation of the water noxious effluvia from the ground where no putrid ferment subsisted. The earth is continually discharging from its surface a quantity of Mephitic air, which we find to be in greater abundance, where the air is confined to the surface of the earth & has little communication with the surrounding atmosphere; Pits & Cavities are constantly replete with it.

(We have) here then an evidence of a poisonous exhalation constantly emitted from the earth, and the opinion of putrescency is weakened from the consideration of the Inhabitants of large Cities, Scavengers, Greenlandmen, & Anatomists, not being more particularly affected by this sort of fever than other persons. <sup>(a)</sup> And so far as I have observed, the Effluvia of putrescent animal matters are rather productive of continued fevers than of Typhus, which seems to be the peculiar product of Marshy places. These Effluvia then arise

1. Only when heat concurs with the moisture of the ground.
2. They arise from every humid part of the surface of



of the Earth that is acted upon by a certain degree of heat and not sufficiently ventilated.

3. They are rendered innocent by being diffused in the Atmosphere, and when concentrated & confined they become more noxious, hence the source of these Effluvia is near the surface of the Earth.

When I was in the Spanish West Indies the Watch houses had their ground floors covered with goods and then the people were healthy; but on the removal of the goods, when the damp floors were exposed, every person who slept in them was affected with an Intermittent or Dysentery.

In the Cities of Asia, that are exposed to the inundations of the Nile, a plague nearly subsists till the reflux of the Waters occur; this has been imputed to the mudd that was left on the passing off of the waters; but a more probable explanation of it seems to be this, that the Nile undermines the foundation of their houses & the Earth remaining so long un-ventilated accumulates a great quantity of the Mephitic Air, which on the Retrocession of the waters ascends in copious exhalations and produces the Contagion, and all ground floors are in this view extremely pernicious & liable to pro-



produce the Miasmata.

### Contagion.

Human Effluvia as they arise from our bodies become more active in proportion to the time they are retained, and to the degree of heat necessary to produce the ferment. The Effluvia of healthy bodies are liable to putrify, and those of diseased are more especially liable to such corruption, & hence the frequency of Epidemic fevers in hospitals &c. These Effluvia tenaciously adhere to the clothes and furniture, and hence the Infection may long remain tho' the first cause of it has ceased.

The Effluvia when they are communicated from Air, before they have produced the disorder, are called Miasmata, but after they are communicated from infected persons they are called Contagions.

At the Black Affair the disorder was propagated no farther than to the persons present, and hence it appears that the Human Effluvia, in the state of Miasmata were more virulent than in the state of Contagion.

It has been doubted whether Marsh fevers were contagious, and several instances seem to prove that



that they are not so; When they are however it is not in the state of Miasmata, but they become contagious from their virulence being increased in the body,

The reason that Physicians are so often free from Contagion seems to be from their being chiefly exposed to the Effluvia that arise from the sick body, which are less virulent than those which have long adhered to the clothes furniture &c without ventilation, and hence Nurses &c are most liable to be affected by the Contagions of the sick.

Dr Pringle mentions a curious fact of a great number of Men who were destroyed by mending old tents that had been exposed to the Effluvia of the sick, hence it is a rule never to sit on the bed of a contagious person. All Contagions were originally Miasmata as is evident from the fevers that occur in confined places. The prisoners upon their entrance into a Jail may be all in perfect health, but from the corruption of Perspiration &c Miasmata are produced; and when one person in a Jail is infected, the Miasmata in consequence of some Modification in the diseased body become contagious, & hence the disease is universally propagated.



propagated. The Miasmata then when they become contagious seem to be considerably strengthened; this is not from an increase of virulence in themselves but because the human Miasmata co-operate with the original Marsh Miasmata.

The State of the Bodies to which they are applied.

Agreeable to our general System we suppose Miasmata and Contagion act upon the Nervous System, & its operation in debilitating the Nervous power will be greater as the body itself is weaker. Our System according to its different states of Vigour has a power of resisting debilitating causes, of which we have many instances in the Operation of Cold, & a weak state of the Body is most favourable to its action. It is not necessary to determine whether in those persons that resist the causes of fever the body resists the power of Miasmata and Contagion, or by resisting the operation of cold; but debility whether it favours cold or miasmata will dispose to their effects, and vigour, on the contrary, opposes them.

The enquiry after vigour might lead to several curious problems; it does not so much consist in  
the



the strength of the Animal functions, nor in exteri-  
 -or appearances of strength, but is equally ob-  
 -servable in the Infant and Adult. Besides the  
 Nervous System, Miasmata & Contagion are more  
 or less of a Sceptic nature, & operate as ferments on  
 our fluids; this appears by their lying dormant  
 often under favourable circumstances for some time  
 till they have gained sufficient power by fermen-  
 -tation to produce the effect. It has been often observ-  
 -ed that they do not operate immediately on their first  
 application, but Dr Lind has given some instances  
 of persons being instantly seized on approaching  
 the bed side of a patient; this however is a sin-  
 -gular instance; but the contrary is commonly  
 the case of the disease occurring when the person  
 is far removed from the source of the Contagion. They  
 operate on our fluids by multiplying themselves &  
 increasing their activity which will always be in  
 proportion to the disposition of our fluids to such a  
 sceptic fermentation. But as to the different states  
 of the Animal fluids, why the disposition is dif-  
 -ferent in different persons, and why it is peculiar  
 to the human species alone and not to other Ani-  
 -mals we are entirely ignorant. We know however  
 that



that the fluids in different persons are more or less advanced to a state of putrescency, & in proportion to this are they more liable to a septic fermenta-  
 -tion, and Dr Pringle has justly ascribed the de-  
 -crease of putrid diseases to our greater consump-  
 -tion of vegetable food. Dr Lind says that Scor-  
 -butic patients were most liable to contagious  
 disorders, and were most affected by bil fever  
 arising from Miasmata.

Cold, Fear, and the various causes of debility fa-  
 -vour the operation of Miasmata & Contagion, &  
 the disease chiefly depends on the action of these  
 concurrent causes. This is a very important en-  
 -quiry, as in avoiding these consists our princi-  
 -pal means of Prophylaxis; we can regulate  
 these better than we can <sup>the</sup> activity of Contagion  
 or the state of our System. But as miasmata &  
 Contagion act on the Nervous System they are  
 subject to the laws of habit, and therefore by repeti-  
 -tion become less hurtful and entirely ineffectual.  
 The prisoners who communicate the Miasmata of  
 Typhus are themselves by habit unaffected by it,  
 and the yellow fever of the West Indies does not  
 spread itself among the natives but is confined  
 to



to strangers.

The decreasing violence of Epidemics must be referred to our system being habituated to them, and to the same power of habit must the cause be imputed that Men are but once attacked by the same Epidemic. This leads to the most important & curious problem in Medicine, viz, the number of Epidemics.

Dr Sydenham supposed the Epidemics of each year to be very different, and doubts whether in a certain number of years those of each year may not have a revolution. Dr Boerhaave has pushed this to a much greater excess, he supposes their differences to be immense and their causes undiscoverable.

This opinion from what we <sup>have</sup> said is not well founded; it appears that Epidemics are <sup>very</sup> generally <sup>alike</sup> in like circumstances, and hence they are reducible to a few genera, and give rise to a generic method of cure which is all that we can attempt in most cases.

Diseases that affect a number of persons at the same time must have some cause in common to the whole, and the causes of Epidemics seem to depend on Diet and Air.

Diet.



## Diet.

Certain waters have been supposed to produce Endemic diseases, but the diversity of waters is not so considerable, nor do we find any thing from a Chemical investigation of it sufficient to be a cause of disease; the same observations will apply to our drink in general.

As to our solid food, singular convulsive diseases are observed to arise from the Corruption of certain kinds of grain; but these seldom produce Epidemics, & are therefore little worth our attention. Linnaeus & Sauvages have treated of these, the former under the title of *Raphania*, the latter under his *Convulsio Typhodes*.

In cases of Famine Epidemics arise from the state of our solid food, which is nothing peculiar as no particular species of diseases arises on such occasions. The variety of causes operating in famine seem only to favour the produce & propagation of *Miasmata* & Contagion, but not to give any peculiar disease.

The causes then favouring their Operation are  
 1. Unsound Grain, which are not duly separated  
     from



from the juice by the farmers.

2. The corruption of Animal food. Meat putrefies sooner in that state of the Air that produces Epidemics; and persons in a famine are necessitated to eat corrupted meat, which disposes the body to putrescency.

3. A defect of Aliment debilitates the System & renders it more susceptible to the disorders arising from Miasmata & Contagion.

4. The poor who seldom change their clothes, & in them the filth adheres to their garments & occasions the corruption of Effluvia.

5. Want of warmth from being thinly clad & not having fuel.

6. A collection of people confined in a small space, as in Cities &c.

From a consideration of the causes it will appear that the effects produced may be referred to Miasmata either Marshy or Human, and therefore the disorders produced will have nothing peculiar in their nature.

## Air.

With other Systematics we impute the effects of Air to its sensible or insensible qualities. — The



The sensible qualities are Heat, Cold, Dryness, & Moisture. The insensible, which emit exhalations & effluvia from matters being suspended in the Air as a Menstruum.

We might consider the properties of the Air as Gravity & Elasticity, but it is uncertain if these have any considerable share in producing Fever, they influence other diseases more than fever.

Hippocrates marked the succession of these sensible qualities of the Air, & conceived they had the principal influence in producing fevers. Dr. Mintringham has adopted this opinion in its full extent, & Hucham has nearly referred them to the same cause, his being however connected with contagious fevers from the fleet prevented his receiving the doctrine so generally. Sydenham however supported the opinion of Epidemics depending on the insensible qualities of the Air.

Miasmata and Contagion depend on the insensible qualities of the Air, but the sensible qualities alone may give Epidemic Pyrexia, & modify the insensible qualities.

Heat, Cold, Moisture, and Dryness we have mentioned as the sensible qualities; but heat & cold  
are



are chiefly to be considered, as the moisture & dryness do not affect us with disease without the concurrence of the former. Moisture indeed diminishes the Heat, and gives more healthy Summers, and moist winters are the most salutary provided they are free from Contagion. But in some cases moisture may have a contrary effect, for if it does not diminish heat below the putrefactive degree it will expedite it by retaining the exhalations on the surface; And again if it does not increase cold below that point it will also increase putrefaction by giving an opportunity to greater evaporation. In both cases it acts chiefly by not dissolving the Effluvia around the subject from whence they arise, for it is the confining the Effluvia of putrifying bodies, around them that is necessary to the process of putrefaction.

Dryness, tho' it increases Heat and some of its effects, yet it <sup>by</sup> binding upon the surface of the Earth & thereby diminishing Exhalations, and by suddenly diffusing the vapours that arise, it prevents the generation and application of Noxious effluvia.



On the other hand dryness increases cold, & by giving a more sudden evaporation from the surface of the body affects us particularly. Thus I account for the effects of the dry cold north easterly winds in this & most other parts of Europe. Having now considered the Modifications from Dryness & Moisture, we proceed to

### Cold.

Cold, by increasing the tone of the simple solids and the moving fibres of the Arterial System, gives the Phlogistic Diathesis & thus modifies Epidemics. Hence Inflammatory diseases are chiefly the product of cold climates. They depend on the alternate vicissitudes of heat and cold, in consequence of which they most frequently occur in the Spring. The cold however is the foundation of the Diathesis.

### Heat.

Heat diminishes the tone of the Arterial System, and is observed to take off in Summer the Phlogistic Diathesis that subsisted in Spring & Winter, and which seldom occurs in warm climates. — It tends also to increase the putrefaction of our Animal fluids, & a hot state of the Air is like

10



to produce fevers of the most putrid kind. As Heat is a leading circumstance in the production of Marshy Miasmata it will determine the diseases of warm climates to be putrid, as well from the septic nature of the cause as the septic nature of the fluid acted on. Hence then the two general classes of Epidemics, the Inflammatory and Putrid.

It has been supposed that Hot seasons had peculiar effects on some of our fluids, as the bile, and M. Senac reasoning from this Idea has referred the cause of Intermittents to the Acrimony & quantity of the Bile. We have before shewn that the effect has been mistaken for the cause; but I allow a change is produced by the heat, & it's quantity & acrimony are increased, and from these circumstances the Symptoms may be modified by the Bile. But as Marsh Miasmata produce Intermittents immediately, we have no reason to suspect the intervention of the Bile as a cause.

Tho' it is agreeable to general observation that heat diminishes Inflammatory Diathesis, yet by it's Stimulus it acts somewhat analogous to it,  
thus



thus we observed that as the Summer comes on Intermittents are changed into Remittents, and on the recess of the heat they again recover their genuine type.

Dr Sydenham limited the Inflammatory & Putrid diseases to the Solstices, but in warm climates a difference occurs, for in these they will often come on before the Summer Solstice, and in cold climates before the Winter Solstice; thus they will be sooner or later according to the difference of climate, and their duration may likewise be determined by these circumstances; thus a contagious fever has sometimes continued throughout the winter, but the cold in that season will always determine them to be more of the Inflammatory kind, & vice versa.

The heat of the Summer obviates the Inflammatory state, and renders the fever continued & remittent, and these appearances again disappear in the autumnal season.

Insensible Qualities. Having thus considered Epidemics as depending on the sensible qualities of the Air, we shall now consider them as depending on Miasmata or Contagion, and hence



hence the variety of Epidemics will depend on our ascertaining the variety of Miasmata & Contagion their principal causes.

Miasmata seem only of two kinds, Marsh and Human.

Contagion is of two kinds. 1.<sup>st</sup> Constantly subsisting and ready to appear whenever the season proves favourable to its activity, and whenever it has a body to act upon till then unassailed by the Contagion; as this always produces the same disease we call it a Specific Contagion.

2.<sup>nd</sup> There is another kind however that is generated in the body which may lie dormant for a time till proper circumstances again renew it. (Such may be rendered inactive by the Winter season, but on the return of the heat recover their activity.) These last we distinguish by the appellation of common Contagions, on the number of which the variety of Epidemics must depend.

From these (viz, the Specific Contagions) the several Exanthemata are produced, and which seem to be few in number. The Systematics have given us but ten genera, and many of these are hardly to be esteemed specific Contagions.



As to the common contagions we may meet with more difficulty in limiting the varieties they are capable of. Two species seem only admissible, the Human & the Marsh, and to these sources we may trace the varieties of Epidemics. These varieties may be referred to circumstances giving them greater activity & force, & to the difference of subject acted on.

The result then of our Enquiry shall best refer Epidemics to six heads.

1. Those depending upon Cold, as the Pneumonia, Phlegmasia, & Angina - diseases that are said to be Epidemic but are not universally so.

2. Those depending on cold modifying the Mucous secretion, and by producing a contagion give occasion to Catarrhal affections, as Angina.

3. Those depending upon Marshy Effluvia, that are productive of varieties, but may all be referred to one Genus.

A. Those depending upon the same Marsh Effluvia, but affecting the secretion of Bile or other fluids they produce Dysentery which is often Contagious, and this is agreeable to our doctrine of Marsh Effluvia becoming Contagious by an operation  
on



on our fluids.

5. Such as depend on the Corruption of human Effluvia, & produce Typhus, & the various Synochs connected with Typhus.

6. Arising from specific Contagions, as the various Exanthemata.

This then is our general plan, & you will observe the force of our Conclusion, that Epidemics are not so various or so uncertain in their nature as has been commonly imagined. By thus limiting them to a few heads we put our practice upon a better footing, & acquire an Indication that is applicable to all fevers.

We shall now consider the subject of  
Prognosis.

The Antients seem to have proceeded in this subject on an Empirical footing, and the moderns have rested more on the Authority of these, than on their own Experience & Observation. The maxims of the Antients are not complete or sufficiently defined to be extensively applicable. From the imperfect state of the Antients writings & from the difference of diseases, the moderns have laboured under considerable difficulties in applying



applying these principles; to obviate which, attempts have been frequently made to cultivate the subject on a dogmatic plan.

The supposition they proceeded on was this, That most of the symptoms in fever, depended upon the *Autoxagatela*, and the disease was to be considered as a *certamen inter naturam & morbum*, and the event was to be judged of from the circumstances attending the struggle.

The general doctrine is well founded, but the application of it to particulars is extremely difficult, because we are so little acquainted with the motions of the system that we are unable to distinguish the symptoms, that arise from the causes of the disease which tend to death, from those which arise from the efforts of nature & are salutary. For this reason every physician has had recourse to theory, & this must evidently depend on the proximate cause of fever.

Physicians have rather drawn their conclusions from the symptoms that tended to restore health to the system than from the causes of diseases. From the age of Hippocrates to the time of



of Quercetani one System has prevailed, that fevers are owing to a morbid matter introduced or generated in the System, & the cure is accomplished by nature in the expulsion of this matter. This is the famous doctrine of Concoction and Crisis, which is now pretty generally exploded and on that account undeserving our attention.

Van Swieten in his Answer to Albertini has made several objections to this doctrine, in Aphor. 757, & 767; he has endeavoured to prove that the cause of Intermittents does not act upon the blood but on the Nervous System, and hence does not depend on morbid matter. He is however far from being consistent, as he has first delivered the antient doctrine, & afterwards contradicts it. Men are often convinced of the truth of general views without being able to apply them to particular cases, and this seems to have been the case with the disciples of Boerhaave.

The event of fever is to be determined by observing those motions of the System that may present the means of restoring health or of inducing death.

Hoffman acknowledges that Spasm occasions fever, and the subsistence of the former occasions the continuance



continuance of the latter, and on its cessation the fever comes to a solution. This explains the reason of evacuations accelerating the solution of fever, but it does not account for the renovation of the paracrysm, for tho' the constriction of the vessels seems to be taken notice of, yet it is renewed by some circumstances affecting the system.

The system of Hoffman is therefore incomplete, for by explaining the solution of Spasm we cannot account for the solution of fever, for tho' the former is removed the latter will be again renewed. The causes of Spasm seem to act by a diminution of the Energy of the Sensorium, and induce a debility, but how motions are excited in the System for the removal of this & for the restoration of the body to its healthy state we are entirely ignorant.

I shall abstain from all suppositions, & acknowledge the means by which health is restored in fever to be doubtful & uncertain, for which reason prognosis must in some measure be deserted. From the causes however that induce death a system of Prognosis may be formed, but even here we are involved in considerable difficulties, as the causes of life & death are far from being explained. Dny



On this subject I shall lay down a few Physiologi-  
cal Propositions

1. I suppose it is a Nervous System, or that part we distinguish by the name of Medullary in certain conditions, that constitutes the organ of the Soul, & this is the foundation of life & the Staminal part of Animal Bodies.

2. That the peculiar matter of the Nervous System is such that if it can have a fluid inherent in its substance, fit, whilst its continuity is preserved, to communicate motion from one part to every other.

3. That this fluid is at different times in different conditions for this state of communication, & these conditions we call Excitement & its different states.

4. As separate parts of the Nervous System have communication with each other by the intervention of the Brain, so in this part we observe the different states of Excitement especially to take place, & on this every part depends as liable to be in different conditions with respect to the Excitement in that Organ.

5. As we observe the subsistence & vigour of the Animal functions to depend on the states of Excitement, and as this is less so they in proportion decline



decline, we conclude that in this vitality consists, and the want of it, or Total collapse, is Death.

This leads us to enquire into the causes of this excitement, & what were the circumstances necessary to produce it in the first beginnings of Animal life; but this is a problem not necessary to solve. We observe however that various external powers are capable of increasing or diminishing the excitement of the Nervous System, and the Animal Economy is so contrived that it has power sufficient to support itself independent of all others, and some of its functions are requisite to the support of the Nervous System. But whatever powers the System may have within itself, it could not be supported by the powers of the Economy itself, without the assistance of external heat, & the constant impression of bodies, exciting Sensation, all which are necessary to support the excitement. The Animal Economy then has a power to support itself for some time independent of Assistance, and hence is of considerable use in supporting the excitement of the Brain. It is sufficient to say that those functions are especially necessary for keeping up the excitement of the brain, and Life is consequently dependent on the Action of



of the heart and motion of the Blood in the vessels of the Brain.

The Causes of Collapse or Death may be referred to

1. Powers acting on the Nervous System itself, tending to destroy its excitement. Such we term Direct Causes of Death.

2. To Powers that interrupt those functions of the Animal Economy that are necessary to support the functions of the Brain; these are chiefly interruptions of the circulation, in consequence of which the powers necessary to support the Nervous System are removed. These I call Indirect Causes of Death.

Physicians have only attended to these latter causes, and Boerhaave has only mentioned those causes that affect the circulation or the Nervous power, but without taking notice of those that affect this latter more particularly. Poisons produce Death not in consequence of their affecting the action of the heart, but the functions of the Nervous System which are previous to the action of the heart, for life may subsist after this organ is entirely removed; hence this must be considered



as an effect, and not as a cause of Death.

We can cut out the heart of a Frog, & with a due temperature of the Air the Animal shall discover every Symptom of life & be sensible to pain, but if we apply a brimstone match he is immediately killed.

What we comprehend under direct causes, or such as act primarily on the nervous System & exterminate the vital principle on which the action of the Heart & every other part of the Economy depends, are

1. Cold. As Heat is the first means of exciting the Nervous power, & of producing animal life, so Cold extinguishes this power and occasions death. This has been imputed to some derangement of the circulating System & a congestion of their fluid contents, and Gaubius speaks of a Congelation of the vessels of the Brain. It is probable however from many circumstances that cold acts on the Nervous power and induces Torpor, Sleep, and ultimately Death.

2. Sedative passions. Certain passions of the mind are productive of Stimulant effects, others of Sedative. Fear weakens the action of the Economy



Economy and often destroys life where there can be no suspicion of a direct operation on the circulatory system, & depends entirely in the change induced on the Nervous System on which Fear immediately acts by diminishing the Excitement of the Brain.

3. Violent Excitement. The Phenomena of Sleep & Watching can never be explained on the supposition of a fluid liable to the alternate vicissitudes of Waste and Repair, but are so constantly connected together that they become causes & effects of each other, & the one state from the laws of habit induces the other. Watching induces Sleep the sooner from the excitement having been more considerable.

All strong sensations of violent pleasure or pain diminish the Excitement of the System & induce a debility. Any great excess of these passions will induce Death, and sudden Death from Passion can only be explained by violent excitement producing collapse. In Convulsions a great degree of Excitement at first prevails, but it is followed by Collapse and Death, and no other explanation can be given of persons dying in



in the Venereal orgasm; the death also that occurs from Electricity happens without any evident lesion of the organ of the brain. I observed that the Impetus of the Blood in the vessels is a means of exciting the brain, tho' an excess of it may diminish the excitement, & a repetition induce Death; this may be a cause of the fatal Issue of Fevers; and Pringle has observed the great weakness brought on upon the patients from the Camp Fever.

A. Poisons. We refer the operation of these to a direct action on the Nervous System; they are substances that have a direct tendency to destroy the excitement of the Nervous power.

I shall enquire if there are any causes of Death that may be referred to Poisons. — A Spasmodus affecting only a small part of the body will induce Death. I imagine a poison is here produced as the part first affected is often of no importance to life, and may be easily cut away without damage to the System. There appears then to be no action on our fluids, but a vapour is probably generated whose operation is confined to the Nervous System, & extending



ing to the Brain, extinguishes life. The subtilly & penetration of vapour is sufficiently obvious, but whether it is a Mephitic Air or a putrid vapour of any other nature that is produced is uncertain. It is pretty well ascertained however that a very deleterious vapour is generated by a high degree of Putrefaction, & Miasmata & Contagion that partake of the same virulence, arise from a certain mode of putrefaction; these we have shewn to be of a sedative Nature, and we may suppose them to be possessed of such activity & force as to become strong poisons inducing instantaneous Death. At Marseilles there were frequent instances of people falling dead upon the sudden & immediate contact of the Contagion. Death then in fevers may frequently be referred to Poisons, and these may differ

1. As the miasmata & Contagion are of such activity & force, or in such quantity, as to kill directly by their sedative power.

2. As the same Miasmata and Contagion are not so powerful in quantity or quality as to kill, but by their exerting so much of their sedative power that in concurrence with violent excitement occasion Death.

3. That



3. That it may not produce death in the condition it is introduced, but by acting as a ferment on our fluids it may increase & multiply its activity till it produces the effect.

A. In many fevers a putrescent state arises, whether from the putrid ferment introduced or from the increased motion & heat produced by the fever, and in either of these ways a poison may be produced. The two first depend on the activity of the poison itself, the last as generated in consequence of the fever. Two vicus present themselves on this subject.

1. That whether the putrid poison is introduced or generated it may enter into the Mass of circulating fluids in a quantity sufficient to affect the Nervous System & occasion Death, or,

2. That the circulating fluids are only so far affected as to occasion in them a greater degree of fluidity in consequence of which they are effused into the cellular Membrane, and by stagnating become virulent poisons.

By this effusion into the cellular texture a putrescency is produced that could never take place in fluids in motion. In this last way I conceive Death is produced, and this is confirmed by the ap-



appearances on Dissection according to Morgagni, Pringle, Lind, &c; for in these effusions Gangrene or Phacelus were found, which were the immediate cause of Death.

A Compression of the Brain might be mentioned as a cause; but if we suppose such compression to affect the Nerves going to the heart & lungs it would more properly be considered as an indirect cause, but there is not suspicion of its acting in this secondary way, for the effusions are commonly so small that it could not be supposed to act on the vital functions, & therefore must be limited to the Nervous System & operate as a direct cause. At any rate however it is not a cause of Death in fever. — Coma Febrile has been referred to Compression, but as it is but of short duration it is owing to a temporary collapse.

A destruction of the substance of the brain has been referred to the head of direct causes. Dr Boerhaave's supposition that from the impetus of the Circulation the substance of the brain may be broke down is improbable; these causes we presume do not produce Death by an immediate destruction of the Organ but from the irritation occasioning



occasioning a violent Excitement. The notion also, of Lensor obstructing the fluid in the Nerves is, equally inadmissible, and upon the whole it appears that violent excitement and poison are the only causes of Death in Fever.

*Indirect Causes.* These are such as destroy the circulating System, such as deprive the System of its fluids, or the body of Nourishment; few of these cases are the effect of proper fever, but of the circulating System itself; by the effusions in consequence of Inflammation, & the fluids poured out not admitting of evacuation they stagnate and corrupt, and hence the indirect causes may be referred to Inflammation and Effusion in the Brain, Lungs, and Abdominal Viscera, which give occasion to corruption, and prove fatal to the System.

The two Heads of Excitement may be explained by the prevalence of Stimulant or Sedative effects. The latter may act only by inducing debility, and the prevalence of a Sedative power is to be referred from its effects to one of



of two cases, either operating as Sedative powers or as Septic powers more evidently.

As the indirect causes of Death are to be referred to an increased impetus of the blood they proceed from a Stimulant power with particular determination, and the causes of Death are to be comprehended under the Stimulant, Sedative, or Septic powers, and this consideration of the subject will serve not only for the foundation of Prognosis, but also of Diagnosis, and will necessarily afford us a proper method of Cure. —

The



The import of our last Lecture was that our conduct in the cure of fevers ought to be by the perception of the general tendency of Diseases, & therefore for the proper conduct in the cure of fevers that the study of the Prognostic was absolutely necessary, which I said was to be taken up on an Empiric footing, but as this can only be done from the work of Hippocrates it would be very slight, and therefore we must take it upon a Dogmatic plan which depends on the causes of disease or what brings on Death. We therefore entered on the considerations of Death where I think we have more clear views and more ample doctrines. The causes of Death which operate in fevers are

1. Violent Excitement.
2. Poisons.

The 2<sup>d</sup> or last cause may be of two kinds,

1. As it acts only on the Nervous System, & therefore is purely Sedative.
2. The same Sedative power may act on the fluids as a ferment and produce putrefaction so as to be the cause of Death. The cause therefore of Death is referred either to excess of stimulating, sedative or



or septic powers. With regard to the consideration of these three powers you will readily perceive that we must consider them separately, yet it is by the concurrence of these that we determine our Prognostic.

I shall begin then with these symptoms which express the Excess of Stimulating powers. First I must say that the nature of this stimulus may in many cases be uncertain, and if increased action was always in proportion to its cause it would be salutary, but we find reaction not always in proportion to the cause of disease, for it may be increased from a peculiar irritation of a particular system, and more especially if other stimuli foreign to the nature of the disease have at same time been applied, as for example suppose an Intermittent attempted to be cured by a large dose of pepper, Rum &c, so that it be not cured but changed to a continued fever, in which case there is a foreign and separate stimulus, applied, giving or increasing the irritation of the System. How often such causes operate we cannot determine, but we know they often do happen.

But then there is another view of this matter, we cannot



cannot take up the Reaction in fever merely as a Reaction in consequence of a Stimulus applied, it is always with the intervention of Spasm which always proves a Stimulus too: This may be no more than a salutary Stimulus, it may be so, but the Spasm is often in greater proportion than was necessary with respect to the fever. I explained this when I said that when a phlogistic Diathesis concurs, with this Spasm it always gives a more durable & lasting disease than would otherwise happen. I observed further that this Diathesis may be general with respect to the System, and have also the concurrence of a permanent Stimulus to the whole.

I now go on to consider the Symptoms by which this Lack of Stimulating power is expressed. This is done chiefly by the increased action of the heart, which is found from the pulse, and

From the increased Heat of the Body.

The Pulse, tho' most universally employed in fever and other cases is a matter of the greatest nicety. With respect to some subtle distinctions of Physicians I don't know whether they are ever founded in fact. I have never been able to distinguish them. You may consult De Haen's last part of his Nates



*Ratio medendi.*

I shall take it up very simply, and examine it with respect to its

*Velocity.*

*Strength.*

*Size.*

*Tension, and*

*Regularity.*

Velocity. I mean here to employ a general term, which should comprehend the velocity in each stroke, and the velocity of several as succeeding each other. In no language are the terms strictly applied to these two considerations, I mean to distinguish between a Quick pulse and a frequent pulse. A quick pulse is the velocity with which the Systole of the Heart & Arteries is performed; a frequent pulse the number of pulsations in a given time, exceeding the natural standard. First then

A Quick pulse. The existence of this, or our being able to discover it, has been doubted. It is however a matter of fact. When it is below 100 in a Minute and tolerably full I can discern it, but when above 100 I cannot distinguish between a quick and a slow pulse.



A quick pulse is always a mark of Irritation. I will not however say that it is confined to any irritation of any particular kind, but it is for the most part connected with Inflammatory Diathesis.

A frequent pulse is a greater number of pulsations in a given time. This too arises from an Irritation, but ~~we~~ should err if we considered it as a mark of Irritation alone, and that Irritation was expressed by it, for debility is more frequently a cause of a frequent pulse, therefore in considering frequent pulse we must consider it as depending on Irritation and debility combined, and when the frequency of the pulse is constantly increasing I should impute it either to a concurrence of Irritation and Debility or to an Inflammatory irritation of the brain.

Haller has laid down a proposition that fever begins at 90, and when above 120 that it portends Death. The first part of this proposition is not well founded. Dr Monro tells me of a large man who died of a fever when for a long time the pulse was not above 80, and in many persons whom I know I could not conclude them to be in a fever even when the pulse is at 100, because it is near that



that always. In children and women and in irritable systems we have instances of the pulse greatly exceeding 120 without the disorder proving fatal. But if you take the common run, a pulse that exceeds 120 is always expressive of a dangerous state, from more or less of an inflammatory condition of the brain, and is a mark of the concurrence of Irritability with considerable debility. We next consider the

Strength of the Pulse. Here every judgement must be relative to the peculiar temperament and state of the health of the patient. In disease it may be always considered as a mark of Irritation and of a phlogistic Irritation. But with regard to our prognosis, if there is not reason to believe it arises from irritation of the brain, or from topical Inflammation it is always free from the dangerous consequences that the weak pulse is exposed to.

Size of the Pulse, is a circumstance in which we are much liable to be mistaken. The Artery at the wrist is often of a much smaller size than we would be apt to imagine. I knew lately an instance of this in a large man who had a very small Artery at the wrist.



A full pulse is one of the most favourable symptoms in fever; it is a sign of the absence or small degree of Spasm. It is this full pulse that especially precedes those salutary sweats which prove critical in fevers.

In opposition to the frequent is the slow pulse, which is not always a sign of the absence of Irritation, no more than a full pulse is of the absence of Spasm in comatose patients.

Tension of the Artery as expressed in the pulse, & we distinguish between an hard and a soft pulse between the full and soft, and the contracted & seemingly hard. It is only when the pulse is of a certain size and strength that I can distinguish the hardness, and then in sliding the finger along the Artery it appears like the vibrations of a Cord, & seems rather a subsultus of the Artery than a dilatation. This hard pulse can only be had under a certain size of pulse, and in a certain degree of frequency, for in a certain degree of frequency every pulse puts of this hardness.

A Contracted pulse is a sign of Resistance in the extreme vessels.

It is difficultly distinguished from the small pulse



pulse that arises from debility. In many cases when the pulse is not very frequent we can distinguish between the small & the contracted pulse.

Regularity of the several strokes succeeding each other may be destroyed by want of equality in the several strokes, or in their intervals.

An irregular pulse in fevers is a mark of debility. A quick hard & frequent pulse are marks of Irritation and an Inflammatory diathesis. A slow pulse, full & soft & less frequent are the expressions of the absence of Irritation, or of a moderate spasm in which the Irritation consists. An irregular pulse under the first of these circumstances shew Debility & Irritation conjoined which are very dangerous.

These then are the several states of the pulse; You will now recollect that I said the prognosis is not to be formed from a single circumstance of the pulse, but from their combination.

The other part of our Prognosis was taken from the Heat of the System.

The Theory of Animal heat and how it is generated in the System is uncertain; but I will venture to say that there are certain Theories that are wrong; and



and we reject particularly such as refer it to an intestine motion going on in our System, for when we observe putrefaction going on in the system we see the heat is diminished. We see however that heat is much increased by the motion of the blood.

I shall not here speak of the doubts of De Haen, whether it does not depend solely upon the motion of the blood; for my own part I think there is something farther, however we find it constantly connected with motion, as in the case of Exercise; there may be other circumstances connected, but in fact it is nearly in proportion to the motion of the blood, & therefore in proportion to the increased action of the Heart. There is no judgement to be made <sup>but</sup> by the Thermometer applied with all the cautions De Haen directs. But there are certain species of Heats not to be found by the Thermometer but discovered by our feelings.

Of these is the Calor Mordax & Aeris of the Antients; it leaves a pungent heat which remains on the fingers for sometime; I have often had the perception. How it is to be explained or what it imports I cannot well say; but the heat of the body



body depends upon motion in a great measure, and it is commonly in persons in a sound state distributed with great equality to the various parts of the system, but with respect to the surface of the body it never rises within a degree or two of the internal parts. Now in these fevers that operate by inducing debility they will diminish the motion of the heart, and the effect of this want will be more evidently felt on the surface, hence the skin has less heat in it than the subjacent artery, so that upon pressing deeper we feel a heat which we did not when we kept our finger on the surface. This calor mordax may be always looked upon as a mark of Debility.

The heat of skin may be always looked upon as an excess of Stimulant powers. It's opposite state, Coldness, must be considered as a mark of debility. I conclude too that it is a mark of debility when it is felt only by the patient himself.

From the state of the Action of the heart as expressed by the pulse and Heat we may judge of the state of Stimulus in fevers.

Another mark is taken from the Urine. A scanty high coloured Urine is very universally a mark of



of Inflammatory Diathesis, and of increased action of the heart.

Some will explain this by an alteration of the fluids in consequence of heat. Others by referring it to an altered determination. In either case it is to be taken as an excess of Stimulating powers. Independent of these it may be known by the symptoms of Spasm that remain.

1. To dryness of the skin, on the surface of the body generally accompanied with an uneasy burning heat. It is this state distinguished in Intermittents the hot fit strictly so called. There is no difficulty occurs in admitting this symptom as a symptom of Spasm, but there is a good deal of difficulty attending this consideration in other cases. By Dr Hoffman's system this dryness here should occur in the beginning of all fevers; but in the beginning of many fevers moisture and sweat very easily occur. It occurs when from other circumstances we suppose the Spasm <sup>to be</sup> still present. In the fevers of an Inflammatory kind that have otherwise the Diathesis Phlogistica which gives the most obstinate Spasm, and this has been applied against the whole doctrine, as Sweats



so often denote the absence of Spasm, but this occurs when the cause of Spasm subsists, and is so far from producing a solution or a remission of the fever, that the heat and frequency of the pulse increases, especially if such Sweats are encouraged, which greatly exacerbates the fever, From all this I suspect a particular explanation is wanted. From many other circumstances the doctrine adopted by Hoffman and Myself is sufficient, even tho' we should not be able to explain this phenomenon, but from many other cases of Secretion we know that they may be considerably increased, whilst the secretory vessels are in a Spasmodic state, as in the Diabetes Hysterica where the Urine is very copious tho' the vessels are under a spasmodic state, and thus it is we must account for the sweats that occur so often in the beginning of fevers. Therefore though I put the dryness of the Skin as a symptom of Spasm, yet the Odor Halituous in Inflammatory fevers is a symptom rather of the presence than of the absence of Spasm. It most frequently occurs in Inflammatory fevers, but sometimes too it occurs in the Typhus, because this last admits of temporary Remissions, but only to give occasion  
to



to the recurrence of Spasm with more violence.

2. Another Symptom of Spasm is Dryness of the Tongue. It is a Symptom of the Contraction of the extreme vessels and of the particular heat produced; here I would observe that the Saliva and mucus, are fluids of such a nature as seem to admit of exhalation of their watery parts, the gross and viscid remaining behind, in consequence of this they form a slimy sediment that remains about the tongue and gums of all persons in health - (This becomes more remarkable in fever.) but in health if the fluids be in proper condition, and the heat not too great, in this case the fur on the tongue are neither thick nor too dry. In fever these two circumstances are altered. The heat is considerable, & the afflux of fresh fluid is prevented, so that this fur becomes more considerable; and as this diminution of afflux continues and the tongue is more hot, it becomes dry, brown, and black.

The tongue then is an Index of Spasm and of increased heat.

In the Typhus this does not occur in the beginning, which shews that the Spasm is here not considerable; but even here there is afterwards some degree of



of Spasm & increased heat sufficient to produce a thick fur which goes on to the greatest degree of blackness, as there is here too a putrescent fermentation.

There is not a more favourable symptom in fever than the softening of the Tongue, & the falling off of its crusts.

To this symptom of the dryness of the tongue is to be referred or added as a symptom of Spasm an increased thirst. It is often a mark of the Stimulant power. It often occurs in the beginning of the cold fit of fever, with dryness or claminess, and is then a symptom of Spasm. In some few cases Thirst does not much depend upon Heat or dryness in the mouth, but on a state of the Stomach to be cured by plentiful dilution.

3. A dry and bound Belly is another symptom of Spasm.

Fevers are (often) often attended with a loose belly but these are not always a symptom of the absence of Spasm. It is owing to a topical determination to these parts, whilst the Spasm is considerable with respect to the rest of the system.

A. I would now add that the excess of Stimulant power



powers depending upon Phlogistic Diathesis is is discerned especially by the Blood drawn out of the body.

De Haen has taken much pains to disturb the System on this head. He has shewn that there is nothing more precarious than the judgement physicians have been used to make on blood drawn out of the body. Many slight circumstances that have been commonly unheeded may alter the appearance of this blood drawn out, so that we cannot be too much upon our guard against them. De Haen pushes this a great way. When it shows a different appearance in 24 hours there is no great matter, as the disorder may have been changed during that time, but he says that since it sometimes shows in the same V.S. different faces, sometimes with a buff coat, & in another without any such appearance that we should not draw any conclusion at all from the blood thus drawn out of the body, I cannot but differ from him. In spite of the many Anomalia that appear there is a foundation for a distinction. If at one time I see the blood remain in an uniform unequal red fluid without coagulation, I may say it is somewhat

in



in a state of putrefaction, and if this be attended with other circumstances of putrefaction we shall not in general be misled. So when the symptoms of Inflammation are most characteristical I have seen the blood exhibit no buff, but as in 9 Cases in 10 of Inflammatory Cases the blood exhibits a buffy appearance I will take the presence of it as one symptom of Inflammatory Diathesis.

If it appears in pregnant Women it may be a peculiarity in their constitution; but if in concurrence with other Inflammatory symptoms it is a mark of Inflammatory Diathesis, and of the excess of Stimulant powers from the phlogistic Diathesis.

The symptoms then of Inflammatory Diathesis are,

1. A quick, frequent, and hard pulse.
2. A heat greater than usual.
3. A scanty high coloured urine.
4. A dry skin or a moist skin that is neither attended with softness nor fullness of the pulse, nor a less frequency.
5. A dry tongue.
6. A bound belly.
7. Appearance



7. Appearance of Inflammatory Crust on the blood. With regard to this excess of Stimulant power, it may be dangerous in the way of violent excitement; but by itself and whilst it is general that it is ever mortal I much doubt. It is the least alarming, and more in the power of Art to redress than the others. I mean by saying "when it is general" as not determined to the functions of any organ necessary to life. The Inflammatory Diathesis prevails very strongly in the case of Rheumatism there it is with topical determination, but to parts not necessary to life, so that hardly any persons die of Rheumatism alone. I conclude this from my own practice and that of Dr John Clerk. But nevertheless it may be very hurtful in weakening the System, and in concurrence with other symptoms of debility it may kill. But it is when it exists with topical determinations to particular functions that are necessary to life that it is particularly dangerous.

I now go on to observe that the dangerous topical affections may be referred, I. To the Head.

II. To the breast.

III. To the Abdomen, or some of the considerable internal parts.

(1. The



I. The symptoms which express determination to the Head, which in all fevers are liable to be most considerable. The reason of it is not so obvious, as the upright posture of men might be apt to diminish this determination. Perhaps it may be by encreasing the excitement of the Nervous power.

1. When a considerable pulsation or throbbing occurs in the Carotid Arteries, in the Temporal, or in that one which is in the Sphenoidal Bone by the Ear.

2. By the considerable redness of the face. In Intermittent fevers, when the circulation is restored to the extreme vessels it first appears in the face, that growing turgid - here you must judge of this appearance with the Caution that there is no obstruction in the Lungs or in the return of the blood from the head.

It is shewn likewise by the fullness of <sup>the vessels of</sup> the Eyes, in the Tunica adnata especially. It gives a protuberance to the ball of the Eye and the vessels around it. Whether this occurs because the blood vessels of the Eye are from the internal Carotids I leave you to determine.

3. From encreased Sensibility to Light & Noise.

A. Readach



4. Headach. When this is attended with a throbbing of the temples, a redness & suffusion of the eyes & flushing of the face there is no doubt but it is a symptom of increased determination of blood to the head. But headach is also sometimes ambiguous; it sometimes comes on with the cold fit of fever, here then the Theory is difficult.

5. A constant waking, neither sleeping by night nor by day. This is a dangerous Symptom. It is very rarely that we have found Inflammatory Symptoms of the brain after death but they were preceded by this Symptom, especially a phrenetic Delirium, because it is the same thing that attends an Inflammatory state of the brain. It is known by it's beginning with Anger, Impetuosity, much restlessness, and a constant inclination to get out of bed. Whilst this is the case if it is attended by other Symptoms & preceded by a pulsation of the temples & accompanied with heat, it may be called a true phrenetic Delirium, as it is accompanied with an Inflammation of the Brain. I own I sh<sup>d</sup> here suppose that an Inflammatory state of the brain should prove mortal, but in many cases the



the patient recovers; hence then from these symptoms we cannot infer that actual topical Inflammation is present. Thus we find it is difficult to determine actual Inflammation of the Brain. But the symptoms just now recapitulated are for the most part fatal.

II. A Determination to the Lungs, which is distinguished by Anxiety referred to the Thorax, which is a sign of a more difficult transmission of blood thro' the Lungs, whether it arises from an increased action of the vessels of the part or from a difficult transmission of the blood elsewhere. There is in this case a frequent & difficult Respiration. The Respiration and pulse have much connection, but there is a state where the Respiration is not proportionably accelerated with the pulse, and this gives an Indication that there is a disease of the lungs themselves, especially if it be attended with anxiety & difficulty of breathing. It is made still clearer if there be pains about the Thorax, more vague than in the Cases of Pleurisy and Peripneumony.

2. Another Symptom is the Decubitus Difficilis, i.e. when the patient lies along with difficulty, & likes to



to have his head laid high up. If this be more on one side than another, without amounting to actual Peripneumony, it amounts to a proof of unusual Congestion or accumulation in the lungs, especially if it be with anxiety, pain, and

3. Cough or other Catarrhal affections. There is this difference between proper Pleurisy, Peripneumony, & Catarrh, that the two first arise with topical Inflammation of the Lungs and its investing membranes; the Catarrh is with greater determination to the Bronchial Glands, which is a bad circumstance in fevers as it prevents the transmission of the Blood.

4. To a turgid, bloated, or almost livid Countenance. The determination to the head is discerned by the red cheeks & eyes; but when it is of a more bloated kind and takes on the purple or livid appearance, which shews that the obstruction is in the veins & not in the increased action of the Arteries, It is a bad sign, arising from a want of proper transmission of the Venous blood through the Lungs. It occurs often from an excess of debility.

III. The third topical determination in fevers is, made to the Abdominal viscera, which not being so immediately



immediately concerned in life are not quite so important as the others, but in consequence of the bloods acquiring a high degree of putrefaction, or causing *Aphacelus*, it is more especially the cause of Death. These congestions are less discernible than the others, but are known,

1. From the fullness & tension of the *Hypochondria*. It may be taken for an unusual congestion in the Liver or Spleen. If it is not to be referred to these Viscera it may be discerned by a painful tension of the whole abdomen, which we shall consider under the title of *Peritonitis*, tho' from the seat of the pain we cannot always judge of the part affected.

2. From *Decubitus difficilis*, when the patient is at the same time free from affections of the Thorax.

3. A certain state of Anxiety perceived in the Abdomen. If it be in the Stomach & attended with Nausea it is a symptom of determination to that Viscus; but if it be without Nausea then the other parts may be considered as inflamed.

Vomiting may occur from various circumstances, as from Spasm on the surface or from debility. The Vomiting is in both cases relieved by saline draughts and



and Opium; A vomiting that yields neither to Saline draughts or opium is an inflammation of this viscus or the parts adjoining.

If these Symptoms occur in Intermittents it gives this suspicion more especially on account of the determination there is then to Abdominal Viscera. These topical Inflammations often subsist without the Symptoms I have mentioned, and may be judged from the Climate being cold or the habit Inflammatory.

We now come to speak of these Symptoms which indicate an Excess of Sedative Powers.

The increased Action of the Sanguiferous System has been by most Physicians considered as the chief if not the whole of fever, and the method of Cure has been to obviate this; but a considerable share of Debility also prevails, 99 times in 100 Fever kills by excess of Debility. If we consider this & the cause of fever we shall have reason to conclude Debility to be the principal symptom in fever, to be what constitutes the disease & threatens danger, and it is the symptoms of these that are the harbingers of death. Allowing Debility to take place it may be



a question, whether it is an effect in consequence of violent excitement? Or a symptom of the cause of the disease?

In part it may be induced by violent excitement, but I have given many reasons for supposing it is owing to Miasmata and Contagion that act as sedative powers. Taking the supposition that Miasmata & Contagion are the causes of the Debility we are speaking of, It may act in two ways.

1. On the Nervous System simply & directly.
2. On the circulating fluids as a ferment, inducing a more considerable fermentation, & thereby producing a sedative power, that accumulated & rendered more active has more considerable effects as such. In the first of these ways it shows itself by symptoms of Debility in those functions that are necessary to life, and under this head it acts as a directly sedative power. The other head we shall refer to the septic powers to be treated of hereafter.

First, then as a sedative its action may be referred to one of these three heads, as acting on the

Animal  
Vital, & } Functions  
Natural



It's action on the Animal functions may be reduced to one of these two heads, viz, Those of

1. Motion

2. Sense.

1. Motion. These again I refer to two heads as expressing,

a. Debility simply.

b. Irregular motions, which also imply debility.

a. Symptoms expressive of Simple Debility.

Whether is Debility the effect of increased action in fever, or if it is derived from the cause that produces fever? We have a Symptom that hardly admits of a doubt, viz, that Lassitude which precedes both Spasm & increased action. I formerly defined this to be a Sense of Anxiety & Debility, with a Sense of uneasiness in performing any action. In proportion as it occurs more or less considerably we may judge of the after disease that is to appear; accordingly the debility becomes more evident as the disease proceeds. At first it is expressed by a certain weakness of the lower extremities, so that they cannot firmly place the Centre of Gravity that the body may be placed erect. In sitting the centre of gravity is more easily supported, so that the patient can more easily bear



bear this posture, but even here he bears much on his seat. The least degree of exertion now becomes difficult so that he lies in a recumbent posture; but even here it has different degrees; sometimes he cannot turn from one side to the other, at other times he cannot lie upon his side at all as here some muscles are necessary to be in action, and in this case he falls & lies on his back. For lying on even the back some degree of Muscular motion is necessary, and where they slide down in the bed it is a farther symptom of weakness. It goes farther, when every limb is flaccid, and remains in whatever posture it is put. This is the case with those that are employed in the motions of the body in general. We can judge more compendiously by the appearance of the Face and Eyes alone.

The features of the face & motions of the Eyes are the Index of the Soul, & the energy of the Brain. In health the face is always in some expression, The Eye is open & moveable with rapidity from one object to another. In fevers when the Muscles of the face are without expression, the Eyes immoveable, the Eye lid half lifted up, these are symptoms of considerable debility affecting the System. The accurate

Dr



Dr Lind tells us that from this alone he formed his Prognostics.

These are the circumstances in Voluntary motion that express Debility by a simple inability to motion.

b. We come now to speak of other irregular motions that imply Debility.

There is the Tremor when the patient cannot hold up his Arm without this appearing. This is farther expressed by a considerable tremor of the Tongue. — Not only by this Tremor but by direct Spasm is the same thing expressed, as

When those motions that used to be performed with great Agility are fixed by Spasm, as when the Eye lids remain half lifted up or half closed, more especially if the ball of the Eye be turned up under the upper Eye lid, so that only one half of the Eye appears.

The same thing happens when the Muscles of the lower Jaw are affected, and in the small convulsive motions of Muscles that give subulcus tendinum, and when a stridor dentium is produced which often goes so far as to give Convulsion of the whole body or Epileptic Fit.

It has been doubted whether these two last circumstances



stances Spasm & Convulsion are to be referred to Debility or Irritation. I know that they have been referred to the last, to topical Irritation of the Brain. Hoffman says, Atonia gignit Spasmodum, and it more frequently arises from this than from direct Irritation. That this is the case in fever I infer because they are accompanied with the other symptoms of Debility I have mentioned.

2. We come now to the symptoms in the Animal functions that express a Debility affecting Thought and Sense.

a. In the Mind they give a Thought & Fear. These may be supposed to be owing to moral causes; but affections of the body influence the Mind, so that in certain cases the stout & intrepid is equally affected as the weak & timorous woman; hence in all considerable fevers a remarkable dejection of mind may be considered as a symptom of the Debility being produced in a great degree. It is not so much expressed in words and lamentation, but more certainly in the Countenance which is an Index of the Soul, and that melancholy downcast countenance is to be considered as a symptom of Debility.

b. We consider this state as affecting our Intellect  
or



or state of reasoning. Here we say that Debility is not the consequence of the fever produced, but of the cause producing the fever; Here then we find a difficulty in pursuing a train of Thought, not only this but an involuntary interruption or intrusion of certain things that have no connection with Subject.

When this is more considerable it is expressed by Dreaming interrupting Sleep; these Dreams are said to be generally of the Melancholy kind. It discovers itself first by incoherence in persons coming out or falling asleep.—Then only can it be called Delirium, when it is with the senses awake.

I mentioned a Delirium, to be considered as a phrenitic delirium from topical affection; but this Delirium we are now speaking of may be distinguished by occurring without marks of increased determination to the Brain, and being without fury, rage, &c, but calm and without emotion or passion, and it is sometimes of the cheerful kind. I must not now go back to say how these may be considered as symptoms of Debility.

c. A 3<sup>d</sup> set are these that relate to Sleep and waking. As Sleep so every Coma & drowsiness is to be considered as a mark of Collapse when it is with the Eyes open



open this makes what is called the Coma vigil or Typhomania.

This may express a combination of Irritability with debility, but as constantly occurring it may be considered as a mark of Debility.

I would here consider what is properly called Lethargy, a symptom of Debility with less Irritability than in the foregoing cases.

There must be considered Oblivion and Loss of Memory too. We especially acknowledge this to be the case when it is with respect to the best Associations, as his own bed, nearest relations &c. Different degrees of this Oblivion is expressed when it is recoverable by some objects more than others. Thus I have known a patient distinguish his Physician when he was insensible of any other distinction, even his own relations. — A higher degree is when he is insensible to all objects. — A still higher degree is when he voids Urine & Stools without being conscious of it. This is commonly referred to the paralytic state of the Sphincters, but when this is done with some effort and they are wholly contracted it is to be referred to a Lethargic state of the Sensorium.

With



With respect to the Senses.

When the Tongue & fauces are dry & the patient is insensible to Thirst & has lost all sense, & is unconcerned to eat or drink, this may be owing to an organic affection of these parts: But when it passes to the other senses not connected with topical affection as Hearing (when not connected with Sleep) or Seeing; if then these be lost too, it is the most certain sign of Debility in a high degree.

Another circumstance in Vision is false Vision. This may be imputed to Organic affection; but when it is a loss of sight; a sense of dark spots, mistaking the form & figure of the Object, it may be considered as a high mark of Debility, and when false prominences are supposed to be about them and they endeavour to pluck them off, as in the noted case of Larphologia, it indicates the same thing.

II. Marks of Debility in the Vital Functions.

viz, in the

I. Circulation

II. Respiration.

I. In the Circulation.

1<sup>st</sup> The action of the heart depends upon the Brain & this again upon the action of the heart; hence in all weaknesses an erect posture which diminishes the  
Impetus



Impetus of the Blood to the Brain, will cause more or less of a Cessation of the Heart's motion. Hence it is a Symptom of weakness when upon the patient being put in an erect posture he faints, or in a less degree, a Vertigo, Tinnitus Aurium, & Scotoma comes on, which are the common Symptoms of approaching Deliquium, and therefore of Debility being present.

2<sup>d</sup> Without such Symptoms we find the Symptoms of debility in the pulse. When it is weak & at the same time irregular it is owing to a debility in the heart and in the Energy of the Sensorium.

3<sup>d</sup> By the force with which the blood is expelled to the Extremities.

Here there is an actual Cold, not only to the perception of the patient but also evident to the bystanders, frequently produced. This is a Symptom of the highest debility. It appears in the Remote parts especially in the feet, tips of the Nose, and Ears &c. — Independent of Coldness this Symptom is expressed by paleness of the face, want of red vessels in the adnata, Collapse of Temples &c. — When the features are thus it implies a want of due force in the blood.

Another Symptom of the same is Cold Clammy Sweats. It would appear that when the heart is unequal



to impell the blood into the extreme vessels, that the Arteries contracting push out by their Elasticity a fluid in round drops. It occurs more especially in the face, because in fever the blood is especially determined to the Head.

## II. In the Respiration.

1. A small Respiration is a mark of Debility, because then neither the Diaphragm nor Abdominal Muscles are fully exerted.

2. A more frequent Respiration is to be considered as a mark of Debility, when upon the least motion it is increased, so that upon speaking or lifting up the hands, altho' before not particularly frequent, it becomes so after this small Exertion.

3. It is a mark of Debility when it is laborious. - In health Respiration is performed by the Diaphragm independant of the Intercostal Muscles; but in this case not only these but also all the Muscles that can affect the motion of the Ribs are also employed, for instance these between the Scapula. This Authors have called the Respiratio Sublimis.

Another is the Respiratio Luctuosa; in this we supply the want by a large full & sighing Respiration. This



This too when it occurs in fevers is a mark of Debility.  
 — But all these cases may occur with the Marks of Congestion we have mentioned before. — The weakness in Respiration is more especially expressed by the tone of Voice; a certain vigor in the Muscles of the Glottis is necessary, so that a droning female voice is always a sign of debility prevailing, which sometimes goes the length of Aphonia.

These are the states of Debility in the vital functions.

### III. We now go on to those in the Natural.

I was at pains to shew that the Symptoms in the Stomach depended upon Debility. I before mentioned the Ambiguity that occurs in this subject. It is often merely an expression of the state of Spasm on the surface; but it can arise from Debility alone. — hence with Scotoma, Tinnitus Aurium, &c; which express Deliquium coming on, a vomiting may be joined, which is more to be remarked as other Symptoms of Debility are conjoined; hence vomiting does attend Typhus, and this according to its several degrees.

2. It may be expressed by the motions belonging to those, and hence by Dysphagia or want of Deglutition which is a Symptom of approaching Death.



+ not to a state of Delirium which is often the case.



3. An unconsciousness of the secretions when they come to be fairly referred to a palsy of the several Sphincters. Now tho' I said at first that the Symptoms of Debility give the most certain signs of the approach of Death, yet the Observation of Hippocrates is true that there are no such sure and certain prognostics of the good or bad in fever but we may be deceived. The Symptoms of Debility are the most certain marks of Death when joined with topical affection or a putrid state of the fluids.

I have now mentioned the Symptoms that express a considerable state of Debility, & its various degrees, & therefore a sedative power in the System. I observed that tho' I had in the beginning alledged that these Symptoms of Debility give the most certain Symptoms of Death, yet that the Symptoms on which we found our prognostic are not absolutely certain. Diseases sometimes end fatally altho' they have been mild and free from any violent Symptoms. And on the other hand, after the most fatal Symptoms, unexpected Recoveries happen. — We should consider the degree and concurrence of these Symptoms.

Death is certainly to be foretold when a topical Inflammation of the brain concurs with the other  
Symptoms



Symptoms of Debility, or Symptoms of high degree of putrefaction occur with other marks of Debility.

In the first case Sir John Pringle has informed us, that in the Jail fever Dissections shewed some Abscesses in the Brain, which pointed out that some Inflammation must have preceded. We discover it by this particular Irritability concurring with the more considerable Symptoms of Debility we have mentioned. I shall mention some of them in a Typhus as they express Symptoms of the greatest debility.

If there occurs at the same time marks of Irritability peculiar to the Brain, as Sensibility to light & noise without any irritation of the heart & Arteries in general; if there occurs redness & suffusion of the Eyes especially when not accompanied with redness or flushing of the face, the Irritation in this case seems confined to the Internal Carotids.

To this I join Constant Watching.

I have observed that a Comatose state is safer in nervous fever than constant watching, especially if there be Restlessness without topical Affection of the Thorax or Abdomen, especially too if there supervene any Phrenitic Symptoms.

This same state is pointed out by a very frequent pulse



+ A Pulse of 120 continuing several Days together  
may be considered as very dangerous; but if  
only occurs one Day without continuance tis  
not so much so. I have more than once met  
with the Pulse up to 140 & the Patient do well.  
Haller however reckoned a Pulse up to 120 as  
almost always a forerunner of Death.

The best treatise on Prognostics is  
by Posper Alpinus.



pulse small & contracted. Any pulse above 120<sup>+</sup> is a mark of considerable debility, joined with Irritation. No irritation in that respect is so powerful as topical affection of the Brain, hence it is here a Symptom of the case we are speaking of.

The Irregular Convulsive motions I spoke of are Symptoms of Debility, A considerable Tremor which always accompanies the worst kinds of debility — These are *Subsultus tendinum*, Convulsion of the Eyes, &c, founded upon this that with debility of the system in general there occurs a topical affection or Inflammation of the brain, which is very seldom recoverable.

These appearances are often accompanied by a sudden flow of pale limpid Urine.

It is a symptom of Spasm affecting the Tubuli Uriniferi, and a symptom of a Spasm affecting the branches of the descending Aorta, which determines of consequence more to the Brain. — This is a Symptom much to be attended to in the Prognostic.

III. Another is the concurrence of Putrefactive Symptoms with Debility.

We touched this when upon putrid fever, but we shall now consider it particularly as occurring,

I In



I. In the Primo Vio.

II. In the Mass of Blood.

III. In the several Excretions.

I. In the Primo Vio.

This is indicated by a loathing of Animal food, a Nausea & considerable Vomiting. These are often the consequence of Spasm on the surface, or debility; But we know as certainly as in the other cases that they arise from any considerable putrescence taking place in the Stomach. We know, for instance, that a surfeit is attended with all these circumstances. In fever they are Symptoms of a state of the fluids, especially when attended with a nauseous taste in the Mouth, a fetid breath, and when distinguished more plainly by very Nigrous belchings.

Another Symptom in concurrence is a great degree of insatiable thirst, and, what especially accompanies it, a craving appetite for Acids of all kinds. It is in the primo vio that a greater quantity of putrefaction goes on than in any other part of the System. We know that after Death putrefaction appears to be most considerable in the Intestines, and hence we expect to find it here, and it appears by remarkably frequent fetid stools.

These



These are the marks of putrefaction in the *primæ viæ*.

II. We now go on to the Marks of Putrefaction in the Mass of Blood.

1. From a state of extravasated blood drawn from the Veins. I would admit all the ambiguities Dr Haen has pointed out; but when the blood drawn does not separate into Crur & Serum but remains a loose gelatinous & half separated mass we may infer it to be a mark of putrefaction. It is perhaps in one clearly ascertained when there is a separation into Crur & Serum; but the Serum has not it's transparency but appears reddish, *Instar Solis Camium*. This shews a dissolution of the red Globules mixed with the Serum.

2. Writers have given a high degree of yellow in the Serum, when it is without suspicion of Reabsorbed Bile, as another Symptom. It is an ambiguous Symptom and occurs also in Inflammatory diseases, but it is as often observed to attend the putrefactive state of fevers; how they are to be distinguished I have not yet learned, but I offer the fact.

The Cohesion of Blood depends neither on the Serosity nor Red Globules, but on the Coagulable Lymph.



We have formerly mentioned a considerable separation of this as a mark of Inflammatory Diathesis. Here an ambiguity arises from what De Haen and I have observed in putrid diseases that there is often a separation of Coagulable Lymph and this even of some firmness, but here it is with this distinction that it does not acquire that degree of firmness as in Inflammatory Disorders, it is rather a thin film than a firm buff coat, and between that & the Cruor a gelatinous mass is interposed entirely destitute of that firm consistence that there is so observable in Inflammatory disease.

3. From the Red Globules being less coherent between themselves.

They are connected by Coagulable Lymph. I find that in Inflammatory cases there is a considerable separation so that the Cruor is easily broken, owing to this cause, but when it happens without any considerable separation of Coagulable Lymph, I would conclude that there is a putrid Diathesis.

A. When it is ready to run off from the Secretories, giving Hemorrhages from all parts, the Menses appearing in an unusual quantity, and time, is a presumption of a putrid state of the blood. — By the



the Urine too, If we take care that the patient has no Strangury accompanying it from the use of blisters, or from being confined to his bed among Sweats; abstracted from these bloody Urine is a sign of a putrid Diathesis.

It frequently enters into the Intestinal Canal, & is thrown up by Vomit or passed off by Stool; as it stagnates there sometime it comes up in a black or grumous form, which the ancients call Utra bilis, and thus Hippocrates reckons this a fatal Symptom. This must be taken when neither Dysentery nor hemorrhoidal affections occur.

The same issues from the Nose, with this circumstance that it is in small quantities, in drops, the Stilla narium. The reason of it's issuing fluid is from the Nature of the blood, and in drops because it is from a relaxation of the vessels, & not from increased impetus.

Observations are given of it's issuing from eyes, ears, and even pores of the skin. As these are with the concurrence of other Causes they may be considered as Symptoms of a dissolved blood.

This blood is often effused into the cellular Texture. It's happening in the Internal parts is a consequence of



of a higher degree of putrefaction, a Sphacelus, which is mostly attended with Death.

We commonly observe it as poured out under the skin, and forming there Petechie, Maculae, & Vibices, which form is the most putrefactive state of fever. The colour & duration of the Petechie, or the particular circumstances of mere diffusion into Maculae & Vibices leave to your enquiry.

This mark is often discovered only by the Effusion of Serum giving a yellow colour, as in the Yellow Fever.

There is a good deal of uncertainty with respect to the cause of this appearance, whether it be owing to the Serum of blood being at this state always of this colour, or that it be from a reabsorption of Bile from a putrefaction in the Serum that this colour may arise, we see in the case of the Bites of Serpents where there is no reason to think there was a suffusion of Bile.

But it may also arise from Bile. In many Intermittents the Bile is secreted in unusual quantity and poured into the intestines. It is accumulated in unusual quantity in the Gall bladder, so that without any considerable obstruction of the Biliary ducts  
as



as in Jaundice, there may be a regurgitation & give occasion to yellowness of the blood & other fluids that we have observed. Physicians have taken up the last supposition & supposed that it is from bile.

The last may happen, but we want observation's to ascertain when the one case & when the other prevails. In the Yellow fever there is a redundancy of Bile as appears by Stools & Vomiting, but I would not say that this alone produced the yellow colour as it is also accompanied with marks of putrefaction which may produce the yellow colour in Fever.

III. I now go on to speak of marks of Putrefaction in the Secretions.

1. In Stools.

2. In the Urine. When this is of a yellow turbid or reddish colour. Sir John Pringle observes that a small quantity of putrescent blood mixed with the Urine gives it this turbid reddish appearance.

To this may be joined the Factor of Sweats.

When they are and high smelling it is not always a Symptom of putrefaction. Whether there is a smell expressive of putrefaction I dare not say. I think I have



\* That all our fluids have a disposition to emit  
such a smell—



have met such a smell, we conclude from Blisters emitting such a one frequently, in so far as that Sir John Pringle tells us that often the Nurses were scarcely able to dress them.

Another is a cadaverous smell of the whole body. I have often perceived it for a day or two before death, and it is a certain presage of its approach.

The common people consider it as a presage of Death when Magpies & Common Crows come to pitch on the low Cottages. Nor is this altogether to be rejected as superstitious. These Animals have a very accurate smell in discerning putrescent flesh, and will hence come a great way & perch upon these low houses, from which the vapour easily escapes.

This finishes the marks of putrescence in our fluids &c. Such Symptoms are in the beginning accompanied by all the marks of Inflammation. When the putrid state is brought on it is expressed by the state of Typhus & these signs which indicate Death.

These then are the Symptoms from which we can apprehend danger in fevers. The prognosis must be determined by the concurrence of <sup>these</sup> Symptoms, and this in the several degrees as they occur in  
Concurrence



Concurrence and Succession. This leads to a consideration of much importance in prognostics, viz, the circumstance of the Decursus in fevers. However the disease may take on a particular form at first, the circumstances that determine its extent, only occur in succession. Hence I shall consider the periodical movements & Duration, and the particular form of the final end of Fevers. This takes in the Doctrine of the Critical Days of the Antients.

1. I advance this proposition,

That if the Movement of fevers are periodical, consisting of repeated Paroxysms, that they are repeated at determined Intervals, and that the Issues of fevers whether in Health or death will occur especially at the beginning of such Paroxysms, and hence I say there are Critical days.

I say that the Movements of fevers are periodical especially arising from proofs of a Diurnal Revolution in our System. This is founded on the proposition that the human System is readily subjected to periodical habits, and that the Economy of every person is determined constantly by this habit which may fix

I



I think Habits do take place in Fevers. They take place in Intermittents most evidently. The movements in the Small pox, Meazles, &c, are equally exact, so in the Asthma, Epilepsy, &c.

Our System is liable to habits, liable to the causes that fix such habits, & in fevers they actually occur. All fevers are fundamentally Intermittent, and if there are amongst these some distinctions there are none continent, and they all put on more or less the periods of Intermittents.

1.<sup>st</sup> then I say that all fevers are fundamentally Intermittent.

2.<sup>d</sup> If it not more strongly, that all fevers, if not originally Intermittents, yet are Continuo remittentes. Here you will recollect all the Arguments I made use of to prove that there is no continent fever, for however obscurely the Remissions & Exacerbations may be, every fever is more or less a Remittent, and I will here add (granting what so many have alledged that they cannot see these Exacerbations & Remissions in the most obscure state) that even these Exacerbations & Remissions do occur tho' they cannot perceive them, and that some change comes on previous to this. I conclude it.



it to be so

1. From the universal tendency of the System.
2. Because after Intermittents have seemingly entirely disappeared so as to have no effects in the System that we can observe, that in many such cases the Intermittent remains, and there is here a still higher correspondence in point of time to the most remarkable periods. Every practitioner knows that Intermittents are easily renewed, and a prudent Physician will avoid all exciting causes especially at these periods when the accessions used to happen. There can be no doubt but that if I used to have a quartan on Monday that on Thursday there is such a state in the body as would on the application of an exciting cause renew the paroxysm, when the same cause would not have been sufficient to effect it on any of the intermediate days, viz, on Tuesday or Wednesday. Now when we see so much of the effects of habit here we must allow that something of the same even takes place in the Continent fever of the Schools; and that it has a tendency to renew it's accession at determined periods.

These



These are the inductions upon which we presume the Animal Economy is inclined to movements which do actually occur.

I will here now say that after all the disputes on critical days, that Esculpiades, Celsus & many moderns, tho' they deny critical days, yet allow periodical movements. Now if amongst these there are certain preferable ones, what these are? and how far universal? These are questions which I am to ascertain as matters of fact.

First then Are there critical Days? I shall examine it in the hands of Hippocrates who first established it. It is necessary now to establish the fact, not as it appeared in after days as they were servile Imitators and as much bigotted to facts as opinions, but as Hippocrates took it up which he did as a matter of fact. Physicians have often satisfied themselves in taking it from his Aphoristical writings. In all generalization some degree of Theory may creep in, some reasonings that are fallacious. Here then I would not give any of his general Announcements, but the facts on which these are founded, so that we do not admitt them unless they are founded on facts. We have such facts. Here Dr De Haen has  
sailed



saved me much trouble; he has culled out all the parts of Hippocrates's works that shew diseases to terminate on certain days. He says there are 200 facts of this kind in the writings of Hippocrates— (There are just 199) — Of these there are 37 that I reject because they are with respect to terminations after the 20<sup>th</sup> day of the disease, after which time they commonly terminate in others. The Crisis of 9 fevers in 10 happen on the 20<sup>th</sup> day or sooner—and besides, these 37 that terminated after the 20<sup>th</sup> day had their crisis divided amongst 16 days, so that there are not enough on each to establish any of them as critical days. Besides, the longer fevers continue the more obscure are their movements.

There are then 162 Cases remaining that had their terminations on the 20<sup>th</sup> day or more early. We are then to consider amongst these which are the most Critical.

107, Happen on one or other of 8 days of these 20 days, which is more than 2 to 1 on these 8 days of the 20. These are the 3<sup>d</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup>, 15<sup>th</sup>, & 17<sup>th</sup>. Here then  $\frac{2}{3}$  of the diseases in question shew a termination on one of these 8 days. So that there is a presumption of 2 to 1 that these are critical days.

There.



There are 11 days remaining. The first day is thrown out of the number because the question is about diseases that remain more than one day.

On the 2<sup>d</sup> & 13<sup>th</sup> days not one crisis happened — 9 still remain. On the 14<sup>th</sup> & 19<sup>th</sup> there is but one happens. On the 15<sup>th</sup> & 18<sup>th</sup> two only. On the 10<sup>th</sup> there are 3 marked only. So that we must conclude that these 5 days with the other three have no pretensions to be looked upon as critical days.

Four days remain which give us more difficulty. On the 12<sup>th</sup> there are five crises. — On the 8<sup>th</sup> four crises. I might here argue from the small number; You must remember when we offer to establish critical days we don't mean to say they always happen on these days and never upon others; It is only a general Annunciation to which exceptio non tollit regulam. In the most regular of diseases (a Tertian fever for instance) we put the period of an Interval ~~constant~~ at 72 hours, but this sometimes anticipates sometimes postpones, but no body thinks here that the general termination of a Tertian is not well established, so that from this very cause a few crises may occur on the 8<sup>th</sup> and 12<sup>th</sup> days.

The 1<sup>st</sup> and 6<sup>th</sup> days still remain. On one of them, they



the 4<sup>th</sup>, there are 12 Crises, which is a greater number than on many we call Critical days. On the 6<sup>th</sup> there are 24 which are even more than on any others.

On the 4<sup>th</sup> Tho' Hippocrates gives us the simple fact, and tho' in consequence of that of 164 cases he has given 12 Crises, yet here Galen himself gives up Hippocrates and tells us that a very eminent Physician observed but two instances of a crisis on the 4<sup>th</sup> day. Galen never saw but one. If you'll recollect what I said on the 8<sup>th</sup> and 12<sup>th</sup> days, that it might happen by anticipating or postponing, you may understand the reason of it perhaps. I could here shew there is a fallacy in the manner of reckoning days, sometimes we reckon from 12 o'clock at night till 12 the night following, at other times they have reckoned from 12 at Noon &c &c. So that I conclude that the numerous instances on the 4<sup>th</sup> day do not amount to disturb our general doctrine.

We shall find more on the 6<sup>th</sup>, for of 162 Crises 25 happened on this day, yet all Physicians have agreed in rejecting this from among the Critical days.

(1. Gomp)



1. From the Ambiguity I have just mentioned, from the Crises happening on this day from Anticipation especially. We conclude those on the 6<sup>th</sup> were from anticipation especially, because the more regular the progress of fever is it's termination is more steady, hence the more regular they are the happier is their issue, and hence when they have an unusual termination it is a sign of the prevalence or force of the cause of the disease. The Crises on the 6<sup>th</sup> are doubtful - of these 25 that did happen 13 were mortal, the other 11 were all attended with relapse, and hence a good Crisis never happens on the 6<sup>th</sup> day. They are either mortal or certain to recur. Hence after having discussed the whole you see that the existence of Critical days ought to be assumed as a fact, here the <sup>8 days</sup> first mentioned have the preference: all the happy crises more readily happen on these 8 days, the unhappy on the other days, with circumstances that shew it depends upon some Anticipation or postponing.

Of all the Crises that are marked as having been decisive 62 ended in health, 62 in death. Of the 62 that ended in Death 34 happened on the Critical days, the other 28 all happened on the days not critical.



Of the 62 that terminated in health there were 52 that had their crises on the critical days, the other 10 were divided amongst the non critical days, & 6 to the 1<sup>st</sup> day, so that only 13 good crises can be said to have happened on the non critical days.

Hence we conclude there are critical days.

Many of these are even Epidemic Constitutions, so that perhaps the solitary instances alone were given of the non critical, and of all the Epidemics ending the same way on the critical days, only one instance is adduced of each particular Epidemic.

Among these 8 days there is a considerable difference, some have more power than others. Of the 107 Crises that occurred on the critical days.

There happened on the 7<sup>th</sup>

On the 14<sup>th</sup> 18. } Crises

On the 20<sup>th</sup> 16 }

So that the 7<sup>th</sup>, 14<sup>th</sup> & 20<sup>th</sup> are the critical days more strictly so called.

On the 11<sup>th</sup>, 17<sup>th</sup>, 3<sup>rd</sup>, 5<sup>th</sup>, and 9<sup>th</sup>. There are crises fewer in number, but still more than on the other days, so that if there be a preference of 8 days in 20, there is a preference of the first three, the 6<sup>th</sup> or 7<sup>th</sup> happen on the 9<sup>th</sup>. If you take these belonging to the 6<sup>th</sup> & put it



it to the 7<sup>th</sup> it will show the preference much more.

Thus the existence of Critical days, as a manifest fact; evidently appears, so that the proposition of Hippocrates is founded on a fair induction from a number of facts, and not on any Pythagorean doctrine as has been alledged; and we conclude it especially if in all ages there is a confirmation of these facts as we find in Martin's Collection, which may be now tripled.

The facts are to be taken as collected in the 3<sup>le</sup> Aphorism of the 1<sup>st</sup> Book, because Galen, who understood Hippocrates's writings better than any man, assumes them, and because Celsus takes them as the ones generally established.

Only one difficulty remains. In all the Editions of Hippocrates that I have seen, the Aphorism I have spoken of gives the 21<sup>st</sup> instead of the 20<sup>th</sup> day. There is something still stronger; I told you that Celsus enumerates the Aphorism and has the 21<sup>st</sup> and not the 20<sup>th</sup> day; but I have told you that all our copies are erroneous, and the copies of the Aphorisms we have published with the works of Galen and all the copies the comments upon have all the 20<sup>th</sup> day. — Celsus too & others have assumed this 20<sup>th</sup> day in other



in other parts, notwithstanding the Aphorism, & Galen too as we observed.

2. It is proved by the facts we mentioned yesterday there being but one example of a Crisis on the 31. day.

3. Because it is consistent with the course of Nature and the explanation we shall give of the whole of the matter hereafter.

The Objections that may still lie against this doctrine are.

1. The Negative Observations of some late Medical Writers. But the weight of Negative Observations is of little consequence against positive ones. We shall however account for this perhaps afterwards.

2. But the chief difficulty arises from the writings of Hippocrates himself; those occur from comparing one part of his works with others. You may see in Celsus where he puts the Objections against Hippocrates in the mouth of Asclepiades. He alleges that Hippocrates has said that fevers have their periodical movements per dies implexas, and, in another place, per quaternas et septimanas. The 12<sup>th</sup> day, says Celsus, is one of the most critical days



days, but yet is an even day; but the 15<sup>th</sup> day is the end of the 2<sup>d</sup> Septenary and the beginning of the third. The Quaternary & Septenary periods were probably Theoretical conclusions and not the result of Observation, but such however disturb not the truth of facts, and we shall endeavour to explain critical days by shewing that they are agreeable to the general course of nature.

It cannot be doubted but some law of the Animal Economy more particularly determines it to the Tertian period, the cause must be referred to a law of the System, which is so universal in fact that one only deviation occurs, which is to the quartan period, perhaps 9991 fevers out of 10000 appear in one of these two forms, as to Quotidians they are all perhaps double tertians or triple quartans.

Whatever periodical movements we shew to be in this way, are consistent with the general law of our System. The tertian is the most universal & fundamental form, and we observe that Epidemics universally begin as tertians, & no instances occur of the disease commencing in the Quartan form; it begins as a Tertian, but in the Autumnal season puts on the Quartan form, whence the Quartan seems to



to rise out of the Tertian type. As in Epidemics Quartans arise out of Tertians, so in continued fevers of the Tertian type Quartans may at last take place. The whole therefore of the critical days seem to arise out of the tertian or quartan periods, and this answers exactly to the days of critical accessions. - From the 1<sup>st</sup> to the 11<sup>th</sup> day the periods are tertian, & from the 11<sup>th</sup> to the end of the disease the periods are quartan, so we observe the 5, 7, 9, & 11, are tertian periods, the 11, 13, 17, & 20 are quartan, the 20<sup>th</sup> we assume as the proper day because it is analogous to the quartan period.

It is probable that the change from Tertian to Quartan will be at the 6<sup>th</sup> period, for it is observed that Tertians generally finish their course in 7 periods, & often come to their height at the 6<sup>th</sup>, which is the 11<sup>th</sup> day. There are very few instances of Tertian periods continuing & giving a crisis on the 13<sup>th</sup> day, but they commonly change to the 11<sup>th</sup>, and hence the 11<sup>th</sup> is so universally a critical day. The critical days therefore of Hippocrates are founded in fact & consistent with the course of Nature & with that general tendency of the system to the Tertian & Quartan periods.



If therefore Observations free from prejudice are made, I think critical days will be fully established. Dr. Gaubius, tho' he is modest on this subject, yet has no doubt of admitting critical days. Fallor in sua constiterit Hippocrati auctoritas, Galeno fides, Natura virtus, & Ordo.

They are however not absolutely invariable & steady, they are only to be considered as a general rule with many exceptions, for the tertian & quartan often change to a Quotidian or double tertian, but with a manifest predominance of the Original fit, and Hippocrates observes that the Quotidian accession passes from odd to even days, and when they pass to even days they still adopt the tertian period; an original quotidian may however take place, or double tertians whose accessions come on uniformly once a day. With this I dismiss the subject, having delivered the most material observations derived from the Antients. I shall now proceed to give my own observations on the subject.

The observation of Remarkable crises or critical days do not so often occur with us as they did with the Antients. - For

1. A degree of heat rarely occurs in this Country sufficient



sufficient to produce Miasmata, whose general effect is the produce of Tertian fevers, and therefore the absence of these leaves us without the common occasion of the proper Tertian period.

2. As most of our fevers arise from Cold they are generally of the continued kind combined with Phlogistic Diathesis, & such are more obscure in their movements.

3. The other kind of Fever we are most exposed to is the Nervous, which most commonly arises from Human Effluvia, & is owing to a prevalence of Debility & from the state of our periods, I cannot point out the movements to the Tertian & Quartan period, but though I was unable to mark the cause, yet I have observed the event of the disease to happen on some of the critical days. The periodical movements of our System may be steady & yet obscure, an Intermittent may cease for the space of a month, & at the expiration of that have a relapse which will occur precisely the same in the order of time as if the Fever had successively continued.

In this Country we have fevers with moderated Symptoms terminating on the 7, 9, & 11 days, but it is extremely uncommon for fevers with violent Symptoms to terminate on such early periods. —  
Fever



Fevers terminating on the 11<sup>th</sup> day, according to the  
 observations of Sydenham, are with us the most  
 common, & any of our fevers that terminate earlier  
 are either those of a moderate kind, or if attended  
 with violent symptoms they terminate fatally on  
 the 11<sup>th</sup> day, and in the course of my practice I  
 have met with more patients that died on the 11<sup>th</sup>  
 than on any other day. The periodical movements  
 are with us less distinctly observed, and from the  
 length to which our fevers run out, the critical  
 evacuations are less considerable, & hence are less  
 remarkable; they are not Crises in the most proper  
 language of the Antients, so that one accession  
 terminates the disease. - An imperfect Crisis hap-  
 pens on the 11<sup>th</sup> to be terminated on the 12<sup>th</sup> & per-  
 haps later; (not complete till the 17<sup>th</sup>) These crises  
 are not terminated by strong profuse sweats, but  
 by moderate ones, and a return of more natural  
 Sleep & appetite, & the ceasing of delirium, a soft-  
 ning of the excretions, & crusts of the tongue,  
 & an abatement of the pulse. Frequently how-  
 ever these solutions are not final & decisive.  
 As to the Urine my Observations amount  
 to



to this that the *Sedimentum pulverulentum*, album, equale, are the characteristics of the perfect Crisis of the Antients; these Symptoms however I have seldom seen, and when they occurred they were not peculiar to critical days. If there is a considerable heat & increased action in the Paroxysm with strong Inflammatory Symptoms, the Urine is red, & becomes somewhat turbid on standing, & has a mucilaginous cloud like a membrane suspended in it. If the Inflammatory Symptoms continue the Urine has the same appearance, & therefore it is a favourable Symptom when the Urine becomes clearer and the clouds less viscid and instead of being suspended fall to the bottom. A thin cloud however is more likely to be long suspended, and a thick Mucilaginous Membrane may soon sink, so that fallacies may occur & make us hastily determine, because no suspension appears that the Crisis is favourable. In the thin clouds small spots are frequently observable appearing as if a quantity of Dust was entangled in the Urine, and such are to be esteemed favourable & salutary appearances; they are not however easily



easily distinguished from the red purpuraceous appearance which attends the Inflammatory State, and shews that the finishing period of the disease is considerably distant.

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Method



## Method of Cure.

I observed that here, as in every other System, we are to deliver the Method of Cure by considering Fever as a Genus. This I formerly took notice of and it is more admissible in fever than in any other disease. — We have endeavoured to limit considerably the Species of fever. The general Indications we have laid down are very universally applicable, and last of all I shall endeavour to make a more particular application. On the whole of this subject I shall take care not to omit any thing that Experience or Empiricism has taught. It is extremely easy to obtain a list of Remedies, and persons on an Empiric plan hardly admit of more than this. But the time & circumstances of administering these cannot be understood but upon some general plan. In forming my Indications I am to follow a Dogmatic plan.

We may proceed upon two plans here. One of them on the supposition of an *Autoxypstia*, or that nature cures fevers. Here our chief Indications will be to employ such Medicines as favour and support the operations of Nature.

The



The second plan is, leaving the *Autopsygia* with a *valeat quantum valere* protest, we attempt to obviate diseases that in a certain degree have a tendency to produce Death.

These two plans have been pursued sometimes separately, sometimes combined more or less. Fevers are often cured spontaneously and without the assistance of art, and most of our practitioners are more obliged to Nature than to their own art.

Considering the state of practice at many periods we should oftener observe the cures of Nature, if not obstructed by art, but at the same time it is a frequent observation that the attempts of Nature to cure diseases are often defective, often erroneous. If every fever was not interrupted by art, say the Advocates for this practice, it would end in health. But the effects of the efforts of Nature are often in such excess as of themselves to prove dangerous, or else they excite other motions that prove contrary to health. Nor is this tendency in the System so firmly established that it cannot be changed or superseded by art. To this there are brought two Objections which must be considered here.

The



The first is when the Method Nature pursues determines a certain quantity to be evacuated.

2. When Nature attempts a cure that cannot be affected in any other way, and in a certain determined time which we must wait for.

With respect to the duration of diseases, I spoke of this when on Critical days. I shall say that a disease is naturally determined to certain periods. I might here observe that a Tertian Intermittent is naturally determined to end in seven paroxysms or less. This has been a matter of observation from the time of Hippocrates to Sydenham and downwards. But if you look into the Writers on Epidemics you will find that they may end some sooner some later than this period. It is by no means so fixed and established as the existence of Critical days which extend to 20. So if you look into Pleghorn you will find that though there be a general tendency for diseases to run their course in a certain time, yet there may be varieties, and the determined course of nature supervened by art. The Cortex Peruviana shews that little regard is to be had to the natural course of diseases. At first



first practitioners were very much afraid of this medicine, but now they have recourse to it as soon as a remission makes it any ways admissible. Hence both these cases may be superceded by Art, and how much soever we attend to nature we understand her operations so little that we neither know how to assist her as to degree time &c.

Upon any System I can find we are not yet ready to explain the nature of the operation of Medicines in fever. We go as far as Dr Hoffman in receiving Spasm, and find that it is connected with an increased action of the heart and arteries, but many times this Spasm subsists when the action of the heart & arteries is weak.

Hitherto the favourers of the Autoxygia have not explained the operations of nature, they talk of Coction &c, but this is all language that has not been ascertained. They may talk of fermentation and the ripening of fruits, but this has no real analogy with the periods of diseases. There are many circumstances in the solution of fever that are not explained. When it is by profuse sweats you may say it is an expulsion of Mor-  
-bific



-bific matter; but it is by a few drops of blood from the Nose. What reason is there to imagine that the Morbific matter is all concentrated here in the Nose? For farther illustration of this see Vansweiten where he is arguing against several disorders being diseases of the fluids but of the nervous System; and from the operation of Cortex Peruvianus too, fresh arguments are drawn. —

Upon the whole, however willing we might be to attend to the operations of Nature we know nothing at all about them. The Stahlian system is the most noted in this way, and it is properly called the *Pathologia Pigrorum seu otiosorum* as they do nothing, and it leads to the most pernicious practice. For proofs of this see Junker's *methodus medendi* of fevers in general. It has led us to no practice. It has rejected the best remedies we know, as for instance they reject Vomits and Bleeding almost wholly. I would say that the only use I can make of the *Autorpisia* is that it does often suspend all operations that are attended with any sort of hazard, as when we are in doubt whether bleeding, blisters &c would be useful or hurtful. If we are very uncertain we may suspend our operation



operation and trust to the Autopsygia alone.

Besides this there is a routine in practice that is too much followed; first bleed, then blister, then vomit, then administer a Glyster &c. Such undistinguishing practice is very bad, and the supposition of an Autopsygia is better.

I can then build no system upon this plan of following the operations of nature.

II. I must then proceed upon the second plan, which will turn upon obviating the Causes of Death. What these are I have already said and referred them to three general heads, and of course our Method of Cure must resolve itself into three general Indications.

- I. To take off the Excess of Stimulating power.
  - II. To obviate the Effects of Sedative powers.
  - III. To obviate the Tendency of Septic powers.
- These are the three general Indications we form in fever.

I. To take off the Excess of Stimulant Powers.  
This may be viewed in two lights.

- I.<sup>st</sup> In it's effects which can diminish the increased action of the Heart and Arteries.
- II.<sup>nd</sup> The second Indication is the immediate cause



cause in the spasm of the extreme vessels, which is the Irritation that supports the increased force of the heart's action &c. Hence this second is to take of the spasm of the extreme vessels. We begin

I. By diminishing the preternatural increased action of the heart and Arteries.

We shall find that all the several remedies comprehended under this indication may be referred to one head, viz, Diminishing the tone of the Arterial System - by tone I mean it's Irritability and Contractility, the force by which it is determined to act. - This is obtained by four different means.

1. By avoiding those Irritations that are the most ordinary support of the tone of the Arterial System.

2. By diminishing it's tension upon which it's tone so often depends.

3. By relaxing the simple Solids.

A. By the use of medicines directly Sedative or having a power to diminish the tone of the System in general or Arterial System in particular.

1. By avoiding those Irritations that are the usual supports of the tone of the System.

In every disease there are several general Indications



Indications delivered in the *Methodus Medendi* as the *Indicationes preservatoria* may prevent a renewal of these remote causes, this may be so in fevers: But it is ~~not~~ so much connected with the *Methodus Medendi* in general that it is not worth specifying it for fever in particular; if you want more see Boerhaave's *Methodus Medendi*. What I mean here are these Indications that are constant and inseparable from us. I have before hinted that whatever may be the nature of our vital powers that nothing is more obvious than that they want a considerable support. In an increase of Stimulant powers these are to be lessened as much as possible.

We are then to speak of the Exercise of such Functions as Physicians have called *Regimen* in opposition to Remedies, viz, The *Regimen Antiphlogisticum*. It is to me the fundamental and most universally applicable Indication with respect to fever. Some doubts may be raised with respect to the universality of its application. Boerhaave has taken a contrary supposition, (see his 6th Aphorism) where he maintains the use of an Irritating and stimulant power. It is however  
an



an Aphorism the most doubtful of application of any in his System, because the debility &c that take place is seldom to be remedied by direct stimulants.

This Antiphlogistic Regimen consists in avoiding external Impressions and its consequences Sensation and Thought. With regard to this I say that Impressions if not the beginning of all motions are the support of them and the cause of their continuance. They will be more or less Stimulant as they are attended with uneasiness or pain. All such Impressions are to be avoided except when some good effects they produce compensate for these bad ones as in the case of blisters.

All impressions, whether painful or not, are to be removed; thus we remove all the Stimuli of Legit-  
ures, take care that the bed be equable & soft so far as this last can be without causing too much heat. Seeing and Hearing are much more difficultly avoided, but we should place our patient in Silence & Darkness as much as may be.

Sensations are more or less Stimulant according to the train they engage us in - even supposing the



the emotions of the mind are avoided, the exercise of Thought is more or less a Stimulant. Now shall we avoid these effects? By substituting such as require little or no thinking. We cannot prevent Thought, but we can alter it. If a man in a fever is anxious about his affairs &c, here we must attempt to suspend Thought and substitute something in its place. It is better to confine his Thoughts to a romance, an Aeolian harp, or some such contrivance. - These rules will be found to be of more consequence than you might at first imagine.

To all this there may be an exception. When the Mind is very anxious, to direct it - When a Delirium is coming on we must recall the Mind to some usual objects, then give him the light, show him his friends are by him &c. Here instead of shutting them up from light and noise we must give them both to fix their attention.

Some Stimulating impressions are constantly applied. These are the temperatures of Heat and Cold in the Air. These applications may be both considered as Stimulant powers, but not so much so as the latter forms the Spasm. Every degree of Cold increases that Spasm that is formed, hence in the



the beginning of fever, whilst the Spasm is forming, nothing is more useful than to avoid the concurrence of external Cold, and hence laying a person in a cold bed will bring on Spasm that would not have occurred at all in a less degree.

Even whilst this Cold is intermixed with flushings of heat, any little contact of cold bed cloaths affects a patient with a degree of horror. Here I would say that the cold fit lasts longer than we commonly imagine, i.e. as long as the patient cannot bear the least contact of cold air or cold cloaths without complaining of Injury. As long as this is the case, so long is cold to be avoided.

But when the hot fit is properly formed then the Impression of Heat is to be avoided; as heat is the Stimulus by which Animal heat is supported we must then consider it in fevers as a powerful stimulus, and the measure of its application is to be carefully studied. The Animal System has a power of generating heat, and the heat produced is of an exact and determined degree in most cases. Nothing is more surprising in the Animal Economy than the uniformity of heat in all Men & Climates. From this and much experience it is presumed



presumed that the generating power cannot be increased nor diminished without considerable prejudice. But the heat producing is not exactly as the generating power, but has a connection with the surrounding temperature. So the heat is in the Ratio of the generating power and the external temperature taken together. The proportion between these is different in different Climates. In this climate the heat produced in our bodies is in the Ratio of \_\_\_\_\_ and the heat of 62 deg<sup>s</sup> of Fahrenheit's Thermometer. In the heat of 62 or at least a little above it the proper heat of the system is preserved without the concurrence of other causes, as clothes &c. In this heat then the heat of the system will be as uniformly preserved that a man might go naked without any inconvenience from cold.

If the temperature of the Air be below 62 deg<sup>s</sup> the heat of the system would be diminished to a pernicious degree if not guarded against by clothes, houses &c.

If the heat of the Air be increased and the change be made suddenly, the Heat of the body will be increased to a pernicious degree. But when the heat



heat is constantly greater the generating power in the system is proportionably diminished. The Heat of our bodies is not always in proportion to the temperature of the surrounding air. Our bodies may have their heat increased if it be not conveyed away, though the heat of the Air remain below 62. Our bodies are some what like a retort over a fire, which will be more or less warm as it has a greater or smaller surface exposed to the Atmosphere, the heat remaining the same in the furnace below it. So the generating power in our bodies remaining the same, the heat may be increased by confining substances on its surface. This will be more or less as the substances are more or less proper to propagate heat, from Wool, which is the least proper, to Silk, Cotton, & Flax.

As it confines the vapour arising, it will also be more or less in proportion powerful in preserving or increasing heat—thus the effects of a varnished cloak inducing a considerable degree of heat are now well known; and when in bed though the clothes are not much more than he wears when up, yet by collecting the effluvia they have a considerable effect in increasing heat. If the face be  
also



also covered you know what effects it has to induce Sweat; thus laying out a single hand or arm has considerable effects in preventing increase of heat whether you consider it as cooling by deriving the heat from the other parts of the body, or any other way.

To apply this to fever; whilst the generating powers may be supposed to be increased, a cooler atmosphere is necessary to balance this; so that here Heat, however produced whether from Artificial fires or from the coverings commonly used, must prove a considerable Stimulus, & increase that heat which is excited by the Fever.

After the hot fit is formed then, we must avoid all external heat, or modify it by the means we have hinted at. Sydenham, from a supposition that most fevers were Inflammatory, advised to take the patient out of bed as much as possible. I shall raise doubts to this method by and by. — If the weakness & lassitude of a patient does not allow him to get up, he should rather lie upon the bed in an ordinary dress than in the bed. If you cannot do this from the inconveniency of changing his dress, he should have little clothes upon him and be only partly im-



immersed under the clothes, an arm or so being out. The bed should be smooth equable & soft, but not so much so as to involve the patient in it as in a downy bed. I don't know any thing more grateful to a patient than laying them on a proper Matress. — There are some exceptions to this. I shall have occasion to mention two.

1. When the application of external heat may be a remedy, because it can be contrived so as to relax the simple Solids and determine to the surface in such a manner as to compensate for the harm it may do by increasing the Circulation.

2. When the determination to the surface is already excited, and the flow of Sweat may be salutary. When this takes place we shall have occasion to say by and by.

As the heat that ought to be maintained in the system depends on a certain balance between it and the external temperature, when this first goes to excess the external temperature should be lower than otherwise might be necessary. In case of fever the diminishing the ordinary temperature might be proper. How to do this with respect to that which is applied to the body is not ascertained by experiment.



A man using violent exercise, when the generating power is increased considerably, may be exposed naked to the air without injury. The same may apply to fevers when the hot fit is properly formed. In certain circumstances a certain degree of cold is very proper, as in the Small pox, when it is applied even with some steadiness.

We have now finished this part of Antiphlogistic regimen, that consists in avoiding the Irritations that are the supports of the tone of the Arterial System.

The 2<sup>d</sup> part of this head consists in avoiding Motion. Every motion of the body is a stimulus to the system. It is almost equally obvious that they are in proportion more stimulant as they are performed by a greater or less number of muscles, or as these are longer or shorter exerted. I will not detain you in saying how we take off the Irritation from Walking, Standing, Sitting, &c. The stimulus arising from muscular motion must be readily understood. In all cases of fever muscular motion must be hurtful. Here it is the exception to Dr Sydenham's above hinted at, arises. I have been often doubtful whether the stimulus from the bed or from an erect posture were most considerable. The erect posture should be



be avoided, if we can, by the other means I have mentioned to avoid any increase of heat from lying a bed.

Even in lying in bed a patient may be with more or less ease; if the bed incline from the upper part a constant exertion is necessary to keep himself up in the bed; so that a bed should be exactly level or raised a little at the lower parts.

I must here mention that Speaking affords a very strong Stimulus, not from the number or force of the Muscles in action, but from agitating the Organs of Respiration, & thereby accelerating the motion of the blood.

3<sup>d</sup> Subdivision is, the Avoiding Stimulant Aliment. The foundation for this is obvious, the exercise of digestion is a Stimulus more or less to the System, for it excites a certain degree of fever. Here the Antients enjoined a strict abstinence in the beginning of fevers, viz, for the first three or four days. It is too general a rule, unless a want of appetite enforces it, our Nurses won't comply with it. What are the circumstances in our food that render it Stimulant? As it is more or less Alcalescent as having a tendency to putrefaction, hence Animal food is more stimulant



stimulant than vegetable. It is more or less  
 Stimulant as it is more or less soluble or re-  
 -maining a longer or shorter time in the stomach.  
 I maintain hence that the flesh of young animals  
 is less Alcalescent than the old, yet as being less  
 soluble it is often more stimulant. Food is  
 more stimulant as containing more or less  
 of Nutriment - As it is more or less perspirable.  
 A total abstinence from Animal food is necessary  
 in the Antiphlogistic Regimen. We would  
 confine our patient to vegetable food, whereof some  
 are more or less disposed to fermentation, flatu-  
 -lency, & solubility. I take the farinacea to be  
 better for all these purposes than the Stora viz the  
 different Greens and Roots. The only exceptions  
 are the dried and acescent fruits, which are gene-  
 -rally advised as a principal part of the vegetable  
 Aliment in fevers. They are only applicable in  
 case of continued fevers, with excess of Stimu-  
 -lant powers.

### Drinks.

From these we may exclude the Stimulating,  
 as Wines and spiritous liquors. They are to be avoid-  
 -ed as much as possible (except in a few cases where



where custom has made them necessary, as yielding universally a powerful Stimulus.

Wine then is to be avoided in all cases of excess of Stimulant powers. A moderate use of fermented liquors & free from the admixture of those commonly called Spiritous is more safe than Alcalescent or Animal food, because their Stimulus is more transitory, and is corrected by the Acidity that attends all Wines.

Water & Watery liquors are to be substituted, But drinks even of the mildest quality are not to be poured in, in the greatest quantities, except in the cases to be mentioned hereafter, as they distend the Stomach and thereby press upon the Lungs and diminish the dimensions of the Thorax, and thus it is Dr Aeghorn has explained why in Southern Countries they won't allow the copious use of drinks in the Cold fit of fever.

These are the three principal articles in the Anti-phlogistic Regimen.

1. Avoiding uneasy Sensations.
2. Avoiding Stimulant Aliment, Motion, and
3. Food, which may also be hurtful from its quantity alone.

The



The other parts have in view the avoiding Irritations arising from the System itself.

1. Thirst, which is differently managed by different practitioners. It is an uneasy Stimulus. I don't know what may have occurred to Southern practitioners with regard to gratifying this or not. But it is a Stimulus that may prove considerably uneasy, therefore if it can be gratified without considerably distending the Stomach and so affecting the Lungs, it may, I should imagine, be gratified.

2. From Crudities in the Stomach, which may be unusual in quantity or Acrimony. We have formerly mentioned how a determination is made to the abdominal Viscera in the beginning of fevers, and an unusual quantity of fluids poured into the Primæ Viæ, which are also of unusual Acrimony - from stagnating in a greater degree of heat they are liable to a greater degree of Acrimony. The presence of Bile or other Acrid matters in the Stomach is often a Stimulus increasing the action of the heart and Arteries in fevers. It is then a very universal Indication to remove the Stimulus, and to unload the Stomach and Intestines.

Emetics are used to evacuate the Stomach. —  
The



The 3<sup>d</sup> Indication is the Collection of an unusual quantity of Fæces in the Intestines. It is well known that Irritations applied to the Alimentary Canal are readily communicated to the rest of the System. If you find what uneasiness the System suffers from a little wind put up, and how much relaxation a patient feels upon expelling it, you will easily understand how this should happen with respect to Fæces, especially in the Rectum. The Viscera too being under a state of Spasm don't pour out the lubricating matter to obviate the Acrimony of the fæces, and hence Emollient Glysters are a part of the Antiphlogistic Regimen.

4<sup>th</sup> Indication is from certain general Acrimony that may be supposed to be in our fluids.

Our blood changes from a mild to an Acid state; in health this Acrimony is not perceived, but the increase of heat and motion in fevers will occasion this in an unusual degree. This is obviated by a part of the Regimen we have mentioned, viz, by throwing in Vegetable Aliment - But this is not enough, we must dilute and diffuse it and support as well as we can the several Excretions. This general Acrimony suggests a copious Dilution especially



especially. These are the several parts of the Anti-phlogistic Regimen, and so of the first means of diminishing the tone of the System.

II. We come now to the second head, viz, the Means of diminishing the Tension of it.

That the Contraction of every Elastic fibre depends upon it's tone is well known, and so of the Moving Animal fibres. The tension therefore as increasing the tone may be considered as a support to the Irritation of the System. — The tension of the whole moving fibres of Animal bodies depend upon the fullness and tension of the Arterial System, and this may depend upon a fullness simply plethoric, or on an increased impetus and velocity of the same fluids. In rigid canals this last would be attended only with increased Velocity of Circulation, but in a body such as ours it is accompanied with increased Tension of the Vessels. Whether it depends on one or the other Cause in either case diminishing the quantity must diminish the impetus and consequently the Tone. To answer this purpose we employ first Bleeding.

The power of this Evacuation in weakening the force



Force of the heart and Arteries is too well known to need any explanation here; now that it does so by taking off the tension and inducing a sudden relaxation of the Arterial System I take to be equally well established. It has its effects most considerably when every other circumstance of relaxation also occurs. It does so often in the evacuation of a very small quantity. Many Spasmodic and Inflammatory disorders are relieved the moment the Vein is opened. The exquisite Tension of the Arterial System is fully illustrated by the Microscopical Observations of Haller, where, upon the smallest aperture being made, there appeared a motion, even a retrograde one, towards the wound. You will hence find the more exquisite the Tension, the more considerable the tone, which will be most remarkable in the Phlogistic Diathesis. Bleeding is the remedy especially adapted to the remedy we are speaking of, viz, to take off the increased action of the heart and arteries. It is accordingly much depended upon.

We must consider tho', that the danger in many fevers arises more from the excess of Sedative than stimulating powers. It may then be dangerous to push



push this powerful remedy too far. In many fevers though the stimulating powers appear in great excess, yet, if they arise from contagion, when the Debility comes on we regret our having weakened the system so much by Bleeding. It is then a nice consideration in what cases we are to employ Bleeding. It requires much Caution and all Physicians have acknowledged this. So far as I can I will mention the circumstances that indicate Bleeding or induce us to abstain from it.

1. The State of the Constitution — As derived from Temperament & original Stamina, Or, as more full & vigorous.

The quantity of circulating fluids is different, in proportion to the fullness, but this fullness is not always exact. The plumpness of the habit may depend more upon the Obesity than on proper Plethora, and we want to distinguish between Obesity and proper Plethora.

There is a distinction between a phlegmatic & sanguine Obesity more easily imagined than described. It is not necessary to distinguish between these last & Plethora in other cases, because tho' there may not be more fluids in such habits than in lean, yet they



they are equally full with respect to the size of their vessels which are always less in fat people. These fat people are also more liable to and hence indicate bleeding.

When we are at a loss with respect to fullness we are determined by the eye. The tension is more exquisite from the age of Puberty to 35, because as the years increase the solids grow more rigid and are more difficultly distended by the fluids, and this goes on till the balance of blood is thrown from the Arteries to the Veins. — We presume that when a fullness takes place in this first part of life bleeding is admissible, if necessary; but it is also admissible in ages subsequent to 35 — As there is a considerable rigidity of the solids we may bleed freely till 50 — May after that, it is not restricted — Any increased impetus may give increase of tone, and so we may bleed even to 80.

I would say that it is not from fullness alone but also from the vigour of the System that we are to judge of the propriety of bleeding. I said the vigour of the Muscular fibres depend upon their tension, & that upon the Arterial System; therefore when we see much muscular force, there is a  
tone



tone that will readily admit the bleeding we are speaking of.

Again, if the person has been accustomed to assume the Phlogistic Diathesis. Those that were formerly liable to Inflammatory diseases may be supposed to partake of them in other disorders; and those who have been in a habit of Bleeding, both may more readily admit of it. — Persons too that have been or are of an Hemorrhagic Constitution.

Those will admit of Bleeding from the Constitution of the body as given by nature, this Constitution is however sometimes formed by art. Cold has considerable power in increasing the tone of our System; a person will bear Bleeding better that has been accustomed to a cold climate than one that has been accustomed to a warm climate & is relaxed by it. It is then in cold seasons and cold climates that Inflammatory diseases arise, and then we may more readily and safely practice Bleeding than in warm ones. It is not the coldness of the winter season alone that gives us this indication; but it has a reference to the patient's being exposed to considerable irregular degrees of Heat & Cold which render it less proper; thus in



in America, where they have very hot Summers & cold winters, they don't bear Bleeding so well as the Europeans do - being so much relaxed in Summer.

The same is influenced by a consideration of the Remote Causes in fever. If Cold alone is the Remote cause, then the fever is a Synocha & is to be cured principally by Bleeding. But if these Remote Causes are Miasmata & Contagion they are universally of a sedative nature. The effects of this sedative power are, a considerable debility which does sooner or latter appear and prevail. It is the beginning of those fevers that we call the Synochus that there is danger of being rash with our lanceet. I shall mention after considerations that will ascertain this, and in cases of Miasmata & Contagion render Bleeding more doubtful.

When Cold comes with Contagion, from the Climate, Season &c, we must be led; but even with Contagion there may be use for Bleeding but it must be used with Caution.

From the Duration of the Disease, the time it has lasted. See Dr. Leghorn's de terminatione febrium, where he conceives that Bleeding is not to be used



used beyond the fourth day. But there is not a more fallacious rule in *Physic*. This is converting a particular into a general rule. This general rule is taken from what I have said that fever arises from the Introduction of a sedative power into the System, and this may increase in quantity and quality, and produce a fever not at first attended with debility. Hence when Bleeding is any way admissible it will be in the beginning of the disease, and will be more limited as the fever advances, but that it is limited to the 4<sup>th</sup> day is ridiculous. Debility may appear on the first day, or the vigour of the System may be protracted to the 14<sup>th</sup>. Bleeding is more admissible in general in the beginning.

We say it is more or less proper from the Form of the Disease, whether more Continued or Remittent. The more evident the Remissions, the less occasion is there for Bleeding. — In a continued form there we bleed as it shews more of the Phlogistic Diathesis.

As the form of the disease is not always obvious, the only thing we have then to do is to observe the nature of the prevailing Epidemic. This was the only resource of Sydenham. Epidemics are here



so seldom that many of them don't fall into the hands of one practitioner; but as soon as the nature of the Epidemic is known we are determined to bleed or not. Sometimes one bleeding proved very pernicious; at other times, though the disease turned out a Typhus or a Putrid fever, yet its stimulating effects were so great in the beginning that it could not be cured but by Bleeding. We must also be governed by the present state of symptoms. The fullness and strength of the pulse always indicate (if not admit) Bleeding - That of the System too, if with marks of topical determination, render Bleeding necessary in every Epidemic. - Topical determinations cannot be without an Inflammatory tendency.

The considerations I have mentioned will determine the first Bleeding. From its effects we determine its repetition. Here we are liable to a fallacy. A person at the first bleeding becomes faint before four ounces are drawn; here we commonly say the person does not bear bleeding well, but many practitioners observe that persons who did not bear the first well, will bear others. Senac gives facts to this purpose when upon  
Syncope



Syncope: As we know that many persons when in perfect health will not bear opening a vein without fainting, hence we must not judge of it from this but from the state of the pulse afterwards. If a pulse, which was before small, becomes afterwards more full, the bleeding has been proper. But if the pulse continues small or weaker then we must proceed with caution and diffidence, and hardly repeat it.

Lastly, we judge of its propriety from the state of the blood that is drawn.

When this shews considerable Inflammatory crust, then we think bleeding has been proper. De Haen has here raised considerable doubts, they have a foundation, but how far they are to be carried is not ascertained. In fevers that have a Septic tendency, in the beginning of such a disease, and an increase of Stimulant powers, a buff coat is not a proof of the propriety of repeating it. But when with heat and hard pulse topical determination is joined, the Indication is rendered more strong.

From the combination of circumstances we can generally determine. The most difficult case is the concurrence of topical Inflammation with general debility. In Typhus there is the topical determina-



tion I speak of. There are always Inflammatory and only to be effectually cured by Bleeding which the System will hardly admit of, and as these Inflammations may be often topical and not affect the System it would be improper to attack it by general bleeding. Hence topical Bleedings are alone admissible which take off the Impetus in the particular part, but do not weaken the System in general; such are only useful when they can be applied very near to the part affected. The two principal cases of topical determination are to the head and Lungs. We can more easily influence the determination to the head than to the Lungs, as by Bleeding in the Temporal Artery &c. When determination to the Lungs affects the parenchymatous substance, it will be less easily obviated than when it attacks the Pleura &c. When topical determination affects the Abdominal viscera I do not think topical Bleedings can be of much service.

It is possible to render topical Bleedings so large as to affect the whole System. In Children the Application of Leeches is often attended with considerable



considerable debilitating effects, from the ouzing of blood from the wound, and I have known this happen to Children once or twice.

I must observe, that in speaking of the operation of Bleeding in general in fever, I have considered only its power of relaxing the System, and its effects in this way to be here obtained. How far it acts by Derivation and Revulsion we shall consider when upon Phlegmasia.

Another observation is, that as it is applicable to take off excess of Stimulating power it is only proper when this takes place in considerable degree. It is hence chiefly applicable when the System is under a Stimulating power. Hence in the beginning of fever, when the Sedative power is only present, Bloodletting will only make its operation come on more strongly. It is not then admissible in the cold fit of fever, and the cold fit is often of some days standing, which is not attended to. Bleeding should not be administered till the pulse is a little full and the heat come on. In such fevers as we are doubtful whether they will be Inflammatory or not, Bleeding early in the disease is attended with dangerous consequences



quences. The Antients would never bleed on the first day of Inflammatory fevers; hence Celsus says the 3<sup>d</sup> day is proper to begin Bleeding; such general rules are dangerous. If the Inflammatory state be fairly formed, the sooner we bleed, the better, but as long as the pulse is small and weak, with alternate flushings, with Sensibility to Cold, in all these cases the use of Bleeding requires more caution.

Another observation is, that though we have mentioned Bleeding as diminishing the quantity of circulating fluids, and that this diminishes the tone of the system, yet its effects are more considerable by inducing a sudden relaxation; so experience shows that one Ounce of Blood taken suddenly will have more effect than two ounces taken in five or six minutes. I have seen upon a vein's being opened the Anxiety and acute pain of Peripneumony relieved, and the same of Pleurisy. Hence it is common to repeat the operation in 5 or 6 hours, and hence they often open the same Orifice, but the blood does not flow so freely as from a fresh one, and for this reason I would in most cases rather make



makes a new orifice than open an old one. — A great effect of bleeding is to be imputed to a sudden relaxation of the Arterial System, hence we should when we employ Bleeding avoid all Stimuli that may support the Heart's Irritation, & keep up the . Hence it is of great use to bleed the patient in a recumbent posture, as an erect posture is attended with Muscular Irritation.

Some circumstances occur to counteract Bleeding. — In Fevers the application of a Blister — For three hours after it is applied it acts as a Stimulus; after this Bleeding has much less effect, and hence Bleeding should be avoided here unless urgent Symptoms occur — Thus, Sir John Pringle observes that in applications of Blisters to the Thorax that the Bleeding must be administered before the Blister has exerted it's stimulating effects.

Another means of inducing the same effects as by Bleeding is by Purging. By this means a very large Evacuation can be made from the System. It is an evacuation from the Arterial System that may answer very well to diminish the quantity of circulating fluids. This quantity that is drawn, is drawn very gradually, and from the



the extremities of different Arteries, and hence has not the sudorific effects we obtain from Bleeding. In order to have the same effect it must be in much greater proportion than is necessary in other cases. Its effects depend much upon emptying the Alimentary Canal itself. Its effects on the System are more considerable than on the Arteries; hence it may increase general debility in greater proportion than it can diminish the increased tone of the Arterial System. In fevers the disease depends in a great measure on a want of determination to the extreme vessels in general. By Purging we can take off this with respect to the Alimentary Canal, but as we increase this we diminish the determination to the surface, & thus we may lose as much on the one hand as we gain on the other.

These considerations have raised much doubt concerning their use in fevers, for whilst some extoll them, others have found them highly dangerous. - Here I would say that in the beginning of fevers, whilst the Stimulating powers are in excess, Purgatives may be useful, on



on the footing we have explained, and hence may be safer at this time; but in relaxing the tone of the Arterial System they cannot be so useful as Bleeding, hence they must be looked upon as a precarious remedy, only to be applied when we cannot employ bleeding.

In cases of Debility they are a dangerous, or precarious remedy; hence though I recommended them here as diminishing the tone, they are confined to a few general considerations.

In Fevers they are hardly to be employed but on Indications very different from diminishing the tone of the System.

The particular Indications in which I admit them, arise in two cases

1. When the contents of the Intestines are copious and acrid, or are such as by stagnation readily become so, as in Bilious fevers, and more especially all the fevers of warm climates, which are only to be cured by a copious evacuation of Bile upwards and downwards.

2. When the Indications for Bleeding may not be so obvious, as in the cases I have above pointed



pointed out, but that there is a great determination to the Abdominal viscera, and in consequence of that there is great accumulation and congestion there, which are not to be obviated but by opening the Lactatories & Secretories. These congestions are principally Venous, so that we shall indirectly diminish the Congestion in the Venous System. The diseases in which both these Indications occur are Bilious Fevers and those of the Intermittent nature, and the use of Purgatives, in all such are well known. You will especially find them treated of in Senac, de Aperientium usu, Book II. Chap. VI. P. 162. where he mentions the use of purging Broths, to which he also joined Neutral Salts, which never were of much service except they purged two or three times a day. These Bilious & Autumnal diseases often put on the shape of Bilious and Petechial fevers. Perhaps here purging may be useful, though in some cases (as the plague) where Debility comes on soon they may be dangerous.

(When fevers are the Offspring of Intermittents,  
Purgatives



Purgatives may be useful, nay necessary, but Stratz of Mentz says too much when he says, that typhoid fever is to be cured by Purgatives alone. His whole doctrine is ambiguous as the medicine he employs is, viz, the Reynel Colchicum, which acts as an Emetic as well as a purgative, and this shews why Tartar Emetic is more or less useful as it is purgative as well as Emetic.

A III. Means of taking off Tension is by relaxing the Simple Solids. This can only be done by the use of warm bathing, which in different shapes is a remedy in fevers, but as it acts more by <sup>the Spasm than</sup> relaxing the Simple Solids we shall refer it to hereafter.

IV. By certain Sedative remedies that have directly this effect. - These are various; some of them are simply sedative; others are attended with Stimulant powers; others with particular determination to the Sensorium. These we mean now are what Physicians call Refrigerants. They take off increased action of the Arterial System. They are chiefly Acids & Neutrals.

Acids. Their operation has been so often explained



plained in Hemorrhages & Inflammation that there can be no doubt but they are applied to diminish the tone of the Arterial System; how they operate we shall not now enquire. I rest on the fact universally known and established. They are also useful in quenching Thirst, by cooling the heat of the Mouth & fauces, and by some Stimulus exciting a flow of Saliva. In the Stomach and Intestines they are useful in obviating & correcting the putrescency that so frequently prevails there.

In the Mass of Blood they cannot be present in such quantities as to have any sensible effects by their Antiseptic powers. But by Stimulating the Secretories and Excretories they may induce such changes there as may be serviceable. These effects may be obtained by all Acids whether Fossil or Vegetable. Of the Fossil the Vitriolic Acid is principally applied. The Vegetable seems preferable to them all. The fossil as more concentrated may have greater effects to prevent putrefaction but as united with other substances the Vegetable Acid enters into the Animal mixt; this may make up for the want of Concentration. The Vegetable too is more diffusible than the fossil, and hence more



\* To this that its use in Inflammations of the Stomach  
has not been ascertained.



more disposed to produce sweating than the other Acids.

This determination is of the utmost consequence in fevers. I have here much in view Vinigar, but the Natural Acid is perhaps equally powerful, & the acid fruits are perhaps more proper. They have this property that they are generally Laxative, and an open belly is useful in fevers.

In Inflammatory and Putrid fevers they are evidently most useful. In the Nervous fever as there is a putrescency observed and to be opposed, even here Acids have their especial use.

Their effects as debilitating are seldom extended to the Sensorium, and if they are I say that it is obviated by the good effects they have in determining to the surface.

The Sal Sedativus of Romberg is almost given up by the French themselves; for my own part I never saw any considerable good effects from it's use.

We come now to speak of the Neutral Salts. These, and especially Nitre, have been considered by Physicians as powerful Refrigerants; the last especially in all Inflammatory cases. The use of it tho' <sup>\*</sup>indirect Inflammatory cases, has not



not been proved. I would argue from it's power in chemistry of the checking the Intestine motion of fluids, and from it's producing a natural cold in the Stomach, which must be from a real refrigerating power, as they are given in a dissolved state. I have no doubt in general that they have refrigerating effects. This extends to all Neutral Salts compounded of Vitriolic Acid and Nitrous Acid; these with the Muriatic Acid and fixed Alkali have very different effects, but joined to the Volatile Alkali it's effects are again changed. The most remarkable of their refrigerating effects is by determining to the surface and thereby proving Diaphoretic & Quiretic. Neutral Salts are Antiseptic, they are also universally laxative, but they are more obviously Quiretic & Diaphoretic, and hence to promote the discharge of the general Acrimony from the System, they are for the most part useful in fevers.

Both Acids & Neutral Salts can irritate the Mucous glands of the Bronchie, & cause Cough. They are then strong Stimulants to the Lungs. (See not, de Aceto &c, when he has been recommending



ing vinegar in fevers, ~~he~~ observes that they increase Cough & says it is better to omit them altogether.

Besides these, some others, as the preparations of Lead, have been thought of. Every body knows that they are Astringent, and that this generallity implies a Sedative power, but I do not impute all their Sedative effects to their Astringent ones. There is a peculiar Sedative power in them that shows itself in the production of Palsy, and they have therefore a direct Sedative power on the matter of the Nerves. It is it's internal use we have in view, and we know that Lead introduced into the body is capable of producing the Cholera Pictonum and Palsy, so that as a remedy it's use is attended with much doubt. The Tinct. Anti-phthisica has been frequently used in cases of violent hemorrhages. It has in England been also employed in Fevers. It does not deserve much attention however; after many trials even in hemorrhage I never perceived it's efficacy. It is a fallacious medicine, and it is very doubtful whether it ought to be considered  
as



as a preparation of Lead, certain it is that it contains very little in its composition. But the Sac. Saturni has considerable effects, and has been frequently employed in fevers and Inflammatory diseases. In the Appendix of the Vol. 7<sup>th</sup> of Acta Eruditorum, Professor Henderson has given us many cases of its use, nay salutary use, under the title "De Sacchari Saturni usu interno tuto." From his own experience he gives instances of its good effects in fevers, and concludes that it is capable of diminishing the excitement of the System; but, whilst it is thus powerful, until we have fixed the limits between the salutary and hurtful effects of it, or ascertained that such Limits there <sup>it cannot be given</sup> are, with any degree of safety.

Amongst the Metallic Substances, besides Lead another, viz. Copper, has been mentioned also, but until we know how to separate the Sedative from the Stimulant effects, the use of Copper is also uncertain.

Practical, & especially Chemical, Authors have spoken of what they call the



Salt of Iron. The Indo Veneris may be considered as belonging to Copper, but a more exact Chemical Analysis will shew that it belongs to Iron. It will hence more properly belong to Tonics than Sedatives. I have not overlooked the soporiferous sedatives, but as in this place I proposed to consider what was proper in Inflammatory Fever they have no use here.

These are the Remedies we employ to take off the excess of Stimulating powers by diminishing the Tone and increased action of the System. It may be also viewed in it's cause, viz, In the Spasm formed in the Arterial Vessels. How far ~~we~~ may <sup>we</sup> take off the excess of Stimulating powers by taking off the Spasm? The Theory of this is involved in many difficulties, but as it does not affect the use of the remedies proposed, I shall offer some speculations on the subject. I told you the cause of fever was a sedative power which weakens the whole, but especially the sanguiferous system on which it acts differently in different parts, and that

the



the effect is more, as the parts are farther distant from the brain & heart, hence the sedative power acts more on the extreme vessels, and though in consequence of certain laws of the Economy the Action of the heart & arteries is seemingly increased, yet the resistance in the extreme vessels is greater than the force of the heart and arteries is able to overcome. This is particularly the case with proper Inflammatory fever.

In simple fever tho' the reaction of the system does excite the action of the heart & arteries, yet it does not extend to the whole Arterial System. — The Excitement is weak in proportion to the distance from the heart, so that the Spasm cannot be overcome till the Action of the extreme vessels is restored.

The conclusion we imply is, that Spasm cannot be removed without restoring the action of the extreme vessels, or that the Spasm of fever is not taken off without restoring the determination to the surface of the Body which in so many cases we can observe to be diminished. — What I hinted may be considered at your leisure, but the conclusion as consisting in restoring to the tone of the extreme vessels I consider as a matter of fact.

The



The remedies I am going to mention manifestly restore the circulation to the surface of the body, & take off Spasm. These remedies I refer to two heads, as

I. Internal; or,

II. External.

The Internal I again refer to four heads

I. Diluents.

II. Neutrals.

III. Sudorifics.

IV. Emetics.

I. Diluents. These are only Waters, or at least liquors of which this constitutes the principal part. Water is fitted to this purpose, as being bland & fluid, it enters without giving any irritation but from it's bulk, and it is suited to enter the most minute parts of the human body. It is in consequence of this last property that it principally acts, viz, by filling the smallest vessels to dilate them and restore their action which has been impaired.

That portion of Coagulable Lymph in our vessels that is not dissolved but diffused can only in extraordinary cases enter some particular vessels, some vessels don't admit perhaps even the dissolved Lymph only the Serosity. In fever notwithstanding the ob-

structed



-structed perspiration & the Spasm on the extreme ves-  
 sels of which we have spoken so much, yet some  
 insensible perspiration takes place, as a patient wastes  
 in fever without Evacuation. By this means the  
 proportion of fluids that ought to subsist betwixt  
 the red globules & coagulable Lymph is diminished.  
 The red globules are not diffused, & by the Constriction  
 of the small vessels their diameters too are diminished.  
 The red globules are not diffused, and by the Constric-  
 tion of the small vessels their diameters too are  
 diminished] This disproportion of fluids makes the  
 small vessels much less filled, hence the contin-  
 uance of Constriction & Spasm must be prolonged.  
 Nothing can obviate this more than by filling the  
 body with water. Water only by being mixed with  
 such matters as are possessed of a faculty of being  
 acted upon by the digestive & assimilating powers  
 is capable of being thus mixed with the fluids, other-  
 wise it runs off by the most obvious & patent excre-  
 -tores, as the Urine or pores of the skin. If this does  
 not happen a person feels a distension to the ends  
 of his fingers, arising in consequence of it. The  
 Dilatation of our fluids is the chief Stimulus to  
 the Action of our Vessels. By this means the Spasm  
 on



on the extreme vessels is likely to be taken off, and hence the use of diluents in fevers. — We have many instances of cures of fever being effected by a sudden and copious throwing in of water. [Schelebernius]. It was not acknowledged here as a remedy till 1710, when the practice was brought from Spain to Italy, and now the physicians there employ it under the name of *Dieta aquea*. They keep their sick from meat & other drink for 3 or 4 days, & pour in water nearly cold, & 3 every hour or two, so that they give a gallon or two in a day, and they say it is one of the best cures in fever. See Serilli, published at the end of Elmüller's works with Notes, at the end of Tom 2. Page 567, you'll find a large dissertation of Serilli's upon his *dieta aquea*; see also Senac, de usu aperientium in his book de natura recondita Feb. intermit. — in chap. VI, where he speaks of it as taking off most fevers, he concludes raro fallit. Senac prefers warm water, therefore it is here not by the cold but by the bulk that it operates as such a remedy.

## II. By the use of Neutrals.

I have mentioned these before as Refrigerants, & I must also take notice of their power in determin-  
ing



ing to the surface; if you consider the consent between the stomach & the skin that they stop vomiting &c; you will see how far it is proper to speak of them as determining to the surface. Their use in fever is not ascertained or accurately observed. Their most remarkable use is to stop the vomiting and the cold fit.

They have the power of removing the cold fit, in consequence of this they have proved powerful remedies in Intermittents, as we know from the use of Sal Ammoniac, one of them. See May's Dissertation on this subject, where you will find that given in the beginning of a cold fit they have effected a cure, but this same Sal Ammoniac fails us in many Tertians, & never cures Quartans. This then acts in the cold fit only, and hence it has not, that I know, proved a cure in continued fevers.

Every thing that promotes a remission in continued fevers has a tendency to make the disease milder, but are such things that have not a tendency to remove the disease wholly, to be admitted? - Imperfect Crises, by hemorrhage, by Stool, by Sweat, have all this effect; so that whilst



whilst we make the disease safer, let us not lengthen out the disorder by it. The Saline mixture in the quantity we employ it in is too inconsiderable for us to expect any effects from it. The larger doses should be referred to the times of Accession or even Critical Accession.

Sal Ammoniac  
Sal febrifug: Sylvii } are the most commonly employed in Intermittents, but not in continued fevers that we know of.

In continued fevers we employ the common Saline draughts, & have altered the fixed for the volatile Alkali. The native Acid is more effectual than the fermented or fossil Acids; hence Regenerated Tartar is not so good as our Saline draughts commonly in use. — With regard to exhibiting it in the time of its effervescence, the disagreeableness of swallowing it is not compensated by its after good effects.

The other two Neutral Salts are Vitriolated Tartar, & Nitre, neither of which are used in sufficient quantity to shew their effects.

Nitre may be Sudorific if given to the quantity of 3℥ in 24 hours, as Dr Brocklesby did, but I find few patients can bear that quantity.

Not



Not only Neutrals but Acids have effects in relaxing the Spasm on the surface of the body, hence Vinegar has considerable effects this way. — Much has been said of the frigorific power of Nitre, there is some foundation for giving it in substance.

**III. Sudorifics.** Under this title we mean any thing that can produce Sweat.

Sweat it may be readily supposed cannot be excited without restoring the determination to the surface of the body, and that therefore this must be applicable for our purpose, but both the utility & safety of the practice has been greatly questioned. Whether we ought ever to attempt to cure fever by Sweat, & in what cases has been much questioned. (Whether we ought ever to attempt to cure fever by Sweat, & in what cases has been much questioned.) I propose to consider it with the cautions, necessary for establishing general rules, & chiefly avoiding prejudice.

In favour of Sweating it may be said, that this is the natural consequence of every increased action of the sanguiferous System, and that fevers do generally end in Sweat, hence we say that these Sweats may be considered as the cause or effect of the solution



solution of fevers, whether it be the one or the other; supposing it is only the effect it is probable that bringing on the circumstances necessary for sweat may bring on the circumstances necessary for the solution of fever. These & some other circumstances, as the Theory of Morbid matter being thrown out may be considered in favour of sweat, and has directed the practice.

We must not rest on reasonings, it will be more to our purpose if we can say that such a practice has been supported by facts, not to go back 140 years and say that then it was the practice to cure fevers by sweat. The practice has been such in latter times. See a Book published against Dr Morgan's mechanical practice of physic. In the 13 proposition of this he explains the nature of sudorifics, and endeavours to cure fevers by sweat. He says that all fevers are to be effectually cured by sweating, and if you take his facts he had very good success, but neither his reasoning nor his facts have much weight with me. Many fevers in the beginning have been cured by sudorifics. but See Sir John Pringle also P. 131. of his 5th Edition in Octavo. There you will see the success of his attempting to obviate all Inflammatory



inflammatory fevers in the beginning, and he also attempts the same in the 2<sup>d</sup> & 3<sup>d</sup> stages of the Typh fever. And still later by Dr Chandler of South Carolina; he insists that all fevers are to be cured by Sweating, even the Inflammatory ones, the Pleurisy & Peripneumony. I may also quote the late practice of James's Powders, which if they cure at all they cure by sweat. The sweating sickness & the plague &c are cured by sweat and hardly by any other means. Hence the practice of sweating is not without support in reasoning & facts.

On the other hand however many considerations render Sweating doubtful. First, because nothing is more obvious than that Sweating at the end of a Paroxysm of an Intermittent is by no means final, even tho' there every thing happens that is favourable to the expulsion of morbid matter & the Solution of Spasm. The Solution of Intermittents often do not depend upon profuse sweats, which often greatly increase the disease, and critical sweats are often very mild. Continued fevers are often attended with profuse sweats which so far from ending the disease do most frequently make it more violent. Sweats in many cases prove certainly pernicious & here



have changed Intermittent into continued fevers, and rendered those last more obstinate.

These considerations give a suspicion with regard to the doctrine supported by the former considerations, and shews at least considerable difficulties with regard to the practice. — With regard to it, it is a matter of fact that these Sweats as procured & promoted by art are especially hurtful when they are excited by Inflammatory stimuli. This was the practice of the Chemists and Cartesians about the middle of the last century of which Dr Sydenham complains so much, & which practice he banished from Physic.

2. It is equally obvious that such Sweats are generally excited by Heat externally applied, either from Artificial heat or the effluvia accumulated by bed cloaths &c. This practice was joined with the other, and hence Sydenham so often took his patient out of Bed.

3. Sweating in fevers is found generally hurtful when it is combined with much heat of the body, & frequency of the pulse. When the pulse becomes more frequent & hard, and is attended with Dyspnoea, Anxiety, head ach and perhaps delirium, whether the Sweats be spontaneous or excited by art there is hardly any doubt



doubt of their being pernicious to the system, aggravating & increasing the distemper.

A. When with the symptoms of violent hot fit the sweat is not fluid, but squeezed out by drops, and clammy, in all these cases sweating is a pernicious practice and protracts the disease with considerable danger. The circumstances that determine sweat to be hurtful may be of two kinds.

1.<sup>st</sup> It implies the presence of a stimulus and increased action in considerable degree; as this stimulus and increased action arise so often from Phlogistic Diathesis, so we have said that the phlogistic Diathesis is the cause of obstinate spasm and continuance in fevers.

2.<sup>nd</sup> Many of the means we have mentioned for exciting sweat act only on the heart or larger Arteries, but do not restore the action to the extreme vessels, therefore whilst the action of the heart & larger Arteries is increased, the spasm continues on the extremities. Here we must be especially afraid of topical determination & effusion, not to say what danger may arise from excessive excitement.

I would endeavour to reduce the matter to a few general rules, which are as follows,

1. When the approach of fever can be perceived and the



the time of its accession known, then Sweat may be used to prevent the formation of Spasm; thus it is that Intermittents are so frequently cured by Sudorifics given to act before the fit comes on, and then support the strength of the patient; and is confirmed by Sir John Pringle's observation.

A 2<sup>d</sup> case, when it can be admitted, is when the first Paroxysm is formed, then the disease may be suddenly cured by sweating properly excited; this last practice of employing sweating when the disease is formed, is when the disease is found to be of a sedative & Septic Nature, which may kill the patient, as the plague, sweating sickness &c, and we may do the same in a sporadic Fever, when it shows much sedative and very little Stimulant power. For this reason it was employed in the Goal fever by Sir John Pringle.

In all cases when the disease is especially formed, the sweat is only admissible in the beginning, because by the repetition of paroxysms both the debility & spasm gain strength. These cases I have spoken of here are when Debility and Stimulating powers prevail.

(When diseases are very suddenly formed with  
excess)



excess of Stimulant powers & Symptoms of Phlogistic Diathesis in the beginning of such Fevers sweating may be attempted, but cannot be continued but with such heat as may prove dangerous.

Nothing is more dangerous than to attempt the Crises of a fever by sweating, and encourage this when ever it appears; it is a popular prejudice. For the circumstances of Sweating are not always the same whilst the Spasm and weather action of the extreme vessels continue, a little sweat may be squeezed out, and this proves pernicious by being encouraged.

But may we not in many circumstances after Bleeding employ Sweating? In Rheumatism we know more & more every day that it is safe. I believe there is another case in which fever is fairly found with many Inflammatory Symptoms, in which the Cure may be attempted by sweat, that is in these Intermittents that put on the form of Continued fevers with Inflammatory Spasm. From our general notion of Intermittents the Spasm is not so obstinate as in the Continued; thus it is that I explain the reason that Dr Chambers has found Sudorifics safe & useful and I believe most of his cases were truly Intermittent tho' they had the continued even the  
In



Inflammatory appearance. See 56 page of London Edition of his work, where he observes that nothing is more frequent than to see a Peripneumony followed by an Intermittent. Dr Chambers joins Purging with Sweating, in cases of Intermittents this is done with peculiar propriety, but his general & universal observation presumes, and the Circumstances shew, that it was peculiarly on Intermittents that he practiced. When there is a Suspicion of Congestion in the Abdominal viscera purging is useful may is necessary to make Sweating safe.

These are the cases in which Sweating may be used. When from the above considerations Sweating is to be practiced an attention in the following cases is always to be had.

1. That it may be excited with as little Stimulus as may be.

2. That the sweat excited be carried on with the assistance of as little external heat as we can, so that Dyspnoea, Headach &c be avoided. The plague is the only case where Sweating is practiced with success. But Mr Chenot shews that large and full sweatings, if carried on with



with considerable external heat, proved more hurtful than salutary. He proposes a gentle sweating of the most moderate kind, only protracted to a due length of time.

3. That sweating be continued to a due length of time. In Intermittents the most copious Sweats don't prevent the return of Miasm, hence we learn that it is proper to continue the sweat till the next paroxysm be formed & hence the sweat should be continued for never less than 24 hours, i.e. till the next fit is passed. Dr Chambers has given an useful advice here; viz, that the patient should keep in bed for 48 hours, i.e. that the patient may not be exposed to cool air for the length of that Type which is most common, viz, the Tertian. Thus Cleggorn says that the Spanish Physicians keep their patients in bed for the whole time of the cure.

Not only the moderate Diaphoresis of Chenot, but even a sweat may be continued longer, but with interpolations, refreshing the patient with cool air from time to time, lightning the clothes &c. From facts we find that these Interpolations may be often practiced with safety, but taking care the



the admission of cool air be not in a stream &c.

4. Whenever it is excited or encouraged we make certain of extending it to the lower extremities, — hence Dr Chambers from time to time puts hot bricks to the patient's feet. I believe for this purpose there is not a better practice than fomentation, of which I shall speak hereafter.

5. It is most safely practiced by putting the patient in a woollen shirt, & not allowing him to be in linnen.

6. To continue the sweat the patient should never be covered with a great weight of clothes. This may be admitted to excite the sweat, but as soon as this is done they should be taken off.

7. If a patient cannot submit, without much uneasiness, to lie in woollen, we must in linnen conduct the matter as well as we can, changing them very frequently in order to avoid the degree of cold which wet linnen occasions, and to avoid the reabsorption of noxious effluvia. — And thus tho' the generality of people are averse to the practice it may be done with advantage.

We come now to the choice of Medicines we use for exciting Sweat.

Inf



In many cases covering up the body causes Sweating, when assisted by a few draughts of warm liquor. Warm water would answer, but, as it is nauseous, Tea or other such matters may be infused in it. Perhaps we may go farther and impregnate the water with some Stimulus as Sage, shavings of Sassafras &c, which is favourable to the excitement of sweat & attended with little Stimulus - hence care must be taken that such Impregnations be not very strong. If Stimuli be allowed I think Wine weakly diluted in Regus is one of the slightest & safest means.

There is a medicine that has been very frequently employed, viz, Opium, in one shape or another. It is one of the most certain Sudorifics we employ - Its *modus operandi* is not ascertained. A specious reason that has been assigned is, that it relaxes the extreme vessels, whilst it increases the action of the Heart & larger Arteries. But I do not rest on this Theory. The Sweat that is produced by it has on many occasions been found to be hurtful. During the age of Alexipharmacs remedies and the Sweating practice about 170 years ago they did employ the directly Stimulant & Inflammatory



Inflammatory Sedatives, but they always joined Opium, hence the Philonium: Methridate &c were employed. We should employ a less ambiguous medicine, especially as we have such as excite the action of the extreme vessels in greater proportion than they stimulate the heart and larger Arteries, such are the Neutral Salts we spoke of.

Cold water was what was much more used by the Antients, of which we shall say more hereafter. The present practice too of joining an Opiate to an Emetic together, as in Dover's powders. I would also join Opiates with Neutral Salts.

4. Emetics. Here I have more doubt. The use of Emetics has been the subject of much disputes. At present the opponents of Emetics are few; De Haen is the only considerable one. I do not propose to discuss the matter by entering into a controversy with this learned Author - He says the Antients employed them but seldom. This is but a negative proof; they are not however explicit enough to form an opinion. — With regard to his other reasons I shall take no notice of them, for I maintain that there are now reasons for giving Emetics which De Haen never dreamt of. I shall therefore



therefore proceed to deliver my own doctrine concerning them.

Emetics are now employed in two ways.

I. To excite a full & repeated vomiting.

II. Where we employ them only to produce sickness & nausea and no vomiting, at least very little.

1.<sup>st</sup> Full vomiting is useful & necessary for cleansing the stomach of these cruditities & bilious evacuations which fever is liable to produce, and which aggravate so many of the symptoms of fever by their stagnation.

2. It is useful in emulging the Biliary & Pancreatic ducts, whereby congestions of the Abdominal viscera are relieved, which attend all fevers.

3. But Emetics, whether employed in full vomiting, or only to excite nausea, have a power in determining the circulation to the surfaces of the body.

These are the principal operations of them, the others are for obviating symptoms. That Emetics have these effects I conclude because that in whatever way given they always produce sweat, and because we can observe that vomiting is employed by Nature to bring on an hot fit. Tho' it



it may have some effect in this way, yet it is more especially connected with the hot fit because an Emetic given in the cold fit immediately produces an hot fit, without the straining of Vomiting. Therefore the good effects of Emetics in this way are not owing to the Vomiting produced, but to the effects of the Emetic Medicine on the Stomach.

With regard to their application, it will be obvious that when we want to unload the Stomach, or to fully emulge the biliary ducts &c, then a full vomit is perhaps necessary. But for the 3<sup>d</sup> effect to determine to the surface I doubt if full Vomiting is the proper practice, because it is attended with pain, fatigue, and produces debility. Nor can it always be repeated with sufficient safety when there is great Inflammatory tendency in the Stomach or neighbouring parts, for then straining to vomit must be highly hurtful. These last circumstances have been employed against Vomiting in general, & whenever such circumstances occur we should desist.

Another circumstance is the Congestion in the Spleen



Spleen, Liver & attending the beginning of all fevers more or less. Here unless an Emetic is more considerable in emulging than in stimulating there will be considerable hazard. The use of Emetics then cannot be so safe nor proper for the second purpose as purgatives, And even though these cases gave no doubt there is another still remaining. Full Vomiting does not so effectually determine to the surface as nauseating doses. sooner or latter by full vomits, the vomit is thrown out. It is attended with fatigue too. When we are deliberating with regard to the propriety of giving Emetics we must observe that when they are given a considerable time before the approach of a fit it not only does not put off but aggravates the fit; This I impute to the debility that is produced, hence nauseating doses are most proper to determine to the surface, for because then only a small part is thrown out by Vomiting, the remainder is washed over the Pylorus, & purges, & emulges the Alimentary Canal, by that means proving most effectual to remove congestions of the Alimentary Canal. These are the general purposes of employing



-ploying Emetics.

We come next to speak of their Administration; the time of the disease; and the time of the Paroxysms when they are to be employed.

Dr Lind says that in the beginning of contagious diseases a vomit exhibited prevents the attack of the disease threatened. Dr Lind thinks that this is by their throwing out the contagious matter taken <sup>into</sup> the body. There is a difficulty attending this; for it insinuates itself from the Stomach to the Nerves, from whence it is not easily recalled. The effects observed by Dr Lind may be explained by the vomit's obviating the first formation of Spasm, and thereby obviating the disease. This we learn from the case of Intermittents, where an Emetic given just before the fit prevents it, which cannot be said to be by throwing out the bile. Diseases are, too, better obviated when no full vomiting takes place and nothing is thrown out. Dr Thomson of Montrose endeavoured to cure Intermittents by Vomits exhibited at the end of the cold fit, because Nature at that time raises Spontaneous Vomiting. Vomiting whenever it arises ends the cold and brings on the hot fit; hence

the



the sooner we give it the better, I mean at the first formation of the Spasm. (See Lind page 66.) We should give it to throw out morbid matter as soon as <sup>possible after the</sup> reception if it is by this means we avoid the consequences. If Emetics are given in the time of a hot fit they increase the Sweats & take off Spasm; hence I would not forbid them when no congestion of the Alimentary Canal forbid; but as diseases gain strength by continuance the sooner we can exhibit them the better.

It is best given at the times of Accession in continued fevers, hence from about 12 to 2 is a good time; but the evening, taking all the circumstances together, is a much more proper time.

It has appeared to me constantly that the first exhibition of this medicine has most effects, and that when frequently repeated they have less effects; whether it is because the System is now habituated to it, or that every cause of debility is a cause of the recurrence & aggravation of fever, and hence that all the Indications whether by Sweating, Vomiting &c if they do not give a final solution of the disease are in danger of aggravating it; So that if it's good effects do not appear on the first exhibition  
in



in consequence of Repetition we obtain very little, tho' if a disease has gone some length before we have an opportunity of giving an Emetic a first exhibition may be of great service. — We have lately had much discussion on the subject of the use of James's Powder & Tartar Emetic; it is seldom that these prove a final cure for diseases; they commonly give some degree of Remission under which the disease proceeds more mildly, and gives an opportunity for the Exhibition of the Cortex Peruvianus, and on this Dr James depends much more than on his powders.

There remains yet a question, which Emetic is most properly employed? All of them may have the effects described, but there is a preference. We shall consider them. The Emetics employed are Squills, Speaccaantha, Formes Mineral, James's Powder, Antimonial Wine, and Tartar Emetic.

### 1. Squills.

It is now rarely employed as an Emetic though it is a powerful one; we principally employ it as evacuating by Stool, Urine, or the Mucous Glands of the Bronchiae. With regard to the Mucous



Mucous Glands I doubt if Squills given in small quantities ever can stimulate them. I never saw them do any good unless they operate on the Stomach.

## 2. Ipecacoeantha.

This in any great quantity so readily excites Nausea & Vomiting that it is thrown out of the Stomach on its first operation. When it is given for the purposes of a Nauseating dose it must be given in Tincture of which the Stomach is much more tenacious. It is plainly as fit as any of the others when its purpose is to evacuate & cleanse the stomach itself merely. It is especially proper when we have any fear of Inflammation and Congestion; hence there is a distinction between the Tincture and Powders. The Tincture being attended with more permanently stimulating effects as its Stimulus is not communicated to the System, it is hence liable to deceive us when we want it to act on the System in general, and desire the Nausea to be permanent. It is now sufficiently established that all the important effects we desire to obtain with respect to the System is much better obtained with Antimonials. Thus since



since the discovery of that remedy Antimonial Emetics have been employed in various forms, as *Thermes Mineral*, *James's Powder*, *Antimonial Wine*, *Tartar Emetic* &c.

### 1. Thermes Mineral

This has been used most in France, and has never been in any general practice in England, so that for its effects I refer you to the French writers. We have no temptation to make farther trials. It is liable to inequality in its preparation, for two portions of *Thermes* cannot be made of equal strength. The effects of it do not depend upon the quantity you exhibit but on the Operation of the Acids of the Stomach in dissolving more or less of it. If no Acid be in the Stomach much *Thermes* may be given without effect.

### 2. James's powder.

This on many occasions may have had excellent effects, but these may have been exaggerated. I cannot perceive any peculiar excellency it can have above any other Antimonial preparation, and it has all the disadvantages of *Thermes Mineral*. It is a medicine that is not active in the state in which it is introduced, but depends upon



upon an Acid being applied, and is liable to more inequalities in its making than any *Thermes Mineraux*; hence every person has observed that it has sometimes no effect at all, at other times very violent ones. In the receipt as published there is a quantity of Mercury added; this may make it more constantly purgative, but we can unite this with any other Antimonial we chuse to employ; here then with respect to all preparations of Antimony that are not rendered active before they are introduced I would reject them, but I would substitute such preparations of Antimony as are in a Saline form before exhibition; for though the difference of temperaments & Constitutions will make an inequality in the best ascertained doses of Medicine, yet we shall be liable in general to little or no deception. We employ of these the Antimonial Wine & Tartar Emetic.

3. Antimonial Wine is unequal or in a very bad condition. The small impregnation that takes place may be lost by precipitation or evaporation. Some preparations of Antimony, at first active, have upon keeping, been given in repeated  
doses



dose without any effect. The subtle matter too with which it is impregnated is more liable to produce vomiting and so deprive us of its good effects. All these therefore being rejected we have only Tartar Emetic remaining.

#### 4. Tartar Emetic.

You can exactly measure its dose. It is liable to some very little inequality in its preparation, but we always know this. In any case by a sufficient dose we can excite any violence of stimulus we please, whether simply to vomit or to extend the system, and we can manage it so as to render its operation of the most gentle kind, by giving it in small doses - One fourth part of a grain in Adults excites Nausea; by repeating this at proper intervals, as an hour, an half hour, or a quarter of an hour, just as you find proper, we can keep up a Nausea without Vomiting if we do not throw in liquids, and this permanent nausea is what is especially useful.

In so far as we avoid vomiting and partly by the intervals, in so far we determine a quantity of the Emetic to pass the Pylorus and produce more



more or less purging for the purposes we have shewn. There is no purpose in Medicine that can be obtained from Emetics but what we obtain from Tartar Emetic.

One practice is to give it at small doses and bring it up to the degree we think necessary. Another practice is to give larger doses, (one grain) at longer intervals, (six hours.) — I maintain that the most favourable time of exhibiting an Emetic is at the time of Accession, which this last practice is in danger of missing, and though the purging effects of Tartar be desirable, yet an excess of it is to be avoided and only gentle purging is required. This is all I have to say on Emetics; their use in fevers strictly so called is generally admitted & known; how far they are useful in Phlegmasie is a question I shall determine in another place.

We have now finished the ~~Internal~~ means of taking off Spasm, and come to the.

External Remedies for the same purpose.

These are Blisters and Warm Bathing.

Blisters



## Blisters.

Though so universally useful in fevers, their theory is still uncertain, & hence the practice with regard to them is much at random. We should wish to have this established by Experiment; but the difference with regard to Theory is not greater than with regard to practice. Nuham speaks with horror of them - Whist says that they constantly diminish the pulse; so that the opinion of Experience is still uncertain on this head.

I shall consider the Theories that have been offered, as these direct the practice.

Many practitioners have imagined that they promote the fluidity of the blood, & on this power of dissolving & attenuating Lentor much has been put in practice. So late as last year a pamphlet was published de abusu Vesicat. in morbis malignis. The Author takes it for granted that they increase the tenuity of the blood which is here in too thin a state - Whatever Experiments shew of their power in this respect - By the small quantity introduced they cannot have much effect in this way. A Grain of Cantharides introduced by the Mouth will do more by exciting Stranguary than



a very large Blister, hence when I say that it is but a small quantity that is introduced by a blister, and I say there is nothing that acts on the crasis of our fluids in a small quantity unless by the intervention of fermentation.

Dr Lewis & do neither of them speak of their operation on the fluids, but account for their effects as being stimulant alone.

We must then consider their effects on the Sensible and moving fibres of the System. — They are considerably stimulant & inflammatory to the part to which they are applied. They soon excite an Inflammation & Effusion of Serum and this gives the appearance of a Blister. Thus far is universally admitted. It is entirely founded upon the Stimulant & Inflammatory power of the Cantharides. By many physicians this has been considered as the chief operation of Blisters, and hence they have derived their use in Nervous fevers when debility occurs. But here many doubts arise, granting the Stimulus to be as great as you please; it is a question whether it be communicated to the System, and how far it is permanent.

With



With regard to the Stimulus being communicated to the System, during the operation of the blister the pulse has been increased in frequency & hardness, and all the Symptoms of the hot fit of fever increased. In many other cases the communication of Stimulus is hardly perceptible.

I have known very often a large Blister applied without any sensible effect either on the pulse or on the heat of the body. - If you make the experiment on people without fever the last will most frequently come out to be the case, and in fevers, from Observation, I affirm the Stimulus is not communicated to the System in any considerable degree.

Even when the Stimulus is communicated to the System in considerable degree, as soon as the Effusion takes place the Cantharides is removed from the part they operate on, and hence the tension is relieved by the evacuation of effused Serum, and the stimulating effects instantly cease, and thus Dr Whyte's fact that the pulse is sensibly diminished comes out to be true. This is frequently, almost universally, the case. The stimulus is only two or three hours of the Inflammatory kind. The Evacuation of Serum takes it off entirely, and  
now



now common experience shews that their effects is considerable in abating Inflammation, & their application useful in most Inflammatory disorders. You will think that this is owing to it's being counteracted by other effects in the neighbouring parts, and this may be true; but Blisters are applied with good success at a distance from the inflamed part; thus Blistering the feet in Peripneumonics (although I do not think the practice eligible) yet has done good, which shews their stimulus is not considerable. I say their effects are most permanent and considerable in the neighbourhood of parts to which they are applied. In case of Rheumatisms the application of a Blister will take off the pain of an inflamed joint, and upon the effusion of Serum the pain is commonly removed. By the Effusion of Serum they take off the Spasm in the deeper seated parts. If we admit this it will explain the operation of Blistering in Inflammatory cases.

As their Evacuations may have some effect I shall here take notice of it. — I say their evacuation is hardly ever so considerable as to have any effect on the System. If it be drawn off



off by Inflammatory Stimulants we cannot impute much to it, all we can say is that it alleviates Congestion in the parts near to it, and thus it does sometimes act. Where the Inflammation does not reach the Skin they cannot do it but by taking off the Spasm of the Inflamed vessels. From what we have said of the Communication of Tension all over the body the relaxation of the Spasm in one part will take off the Spasm in another, and take off that Spasm of the extreme vessels that occurs in fevers. Thus it is then that their operation is and will be limited in different cases.

As by so many their Stimulant effects alone have been attended to, you will see why they have been so much recommended in Nervous fevers. But if you consider how little their stimulant effects often are, and how much good they often do even in Inflammatory fevers, it will shew that in Nervous fevers too they act principally by taking off Spasm, but this must be limited. This temporary Stimulus may be very considerable, hence for this some caution is necessary, and hence they are best adapted to Nervous fevers or the advanced state of Synochus, but I would not



not be positive. It may be said that it is better to obviate the Spasm as soon as possible; but if fevers are of a determined duration, as in Sir John Pringle's Coal fever, of whatever use they may be in the beginning of fever their use is much greater in the advanced state, when both Spasm & debility are to be obviated; and if experience shows that their use is greatest in the advanced state of fevers, it would be imprudent to apply them in the beginning when we have so many other powerful remedies which can be also used.

Husham says they are purely Stimulant, and cautions much against their use in Inflammatory fevers or even in putrid fevers during the Inflammatory state of the putrid fever.

De Haen sets out with making the Indications for blistering to be where the *vis vite debilis* est, as in the 111 page of vol. II. He discusses this, but not clearly, and he uses them in many cases where a Stimulus may be hurtful, and that they do not act as a general Stimulus; they do not accelerate but diminish the pulse and are useful in most Inflammatory fevers. He explains this by their derivation; but this is not satisfactory



story; he gives their use in the Cholera Pictonum where Spasm is to be taken off by blistering the neighbouring parts.

Pringle uses Blisters in all Inflammatory cases, wherefore it is plain he does not consider them as Stimulating.

Lind recommends them much. In contagious diseases he gives singular proofs of their good effects—(in his 68 page)—of 25 people to whom they were applied in the evening, 16 of them were cured in the morning. This is a proof of the Spasm being taken off, but we must not in general expect so great effects from its use.

With respect to their Application.

When there is a topical determination, the nearer the part affected the greater will be its operation. When the determination is to the brain, the effects of its application to the head is most considerable; but there is a difficulty in exciting a Blister there. Next some writers apply them to the lower extremities. They are slower in their operation here than in any intermediate place between the head and these parts, and as debility commonly shews itself here first, they will require



require 12 hours perhaps to rise when they would produce their effects on the Arm in three. You must keep the lower extremities warm when they are applied there.

The Back is only convenient from the size of, the part to which the blister is to be applied. The Arms and Inside of the Thighs are very convenient and as useful as blistering the back which is often more troublesome.

Although I argued against their Stimulating effects being so great as has been imagined, yet they may be hurtful and we should avoid them as much as possible. Formerly when they thought Irritation was necessary they pulled off the Cuticle and applied the plaister to the part. This is to be avoided.

Strangury accompanying their operation is often dangerous. We should avoid it with the utmost care,

1. By throwing in Diluents.
2. By allowing the Blister to remain no longer on ~~them~~ to produce Blistering. The more continued application is hurtful on this very account.

Sinapisms



Sinapisms and some other Acrid substances may have the same effects as Cantharides, by their Blistering, and they may be often employed, when blistering repeatedly may be necessary, but cannot be made use of on account of the Strangury. When we want to have a greater drain too, Sinapisms may be more proper than Blisters, as their effusion subsists longer.

Having finished the Effects of Blisters we now go on to the next external means of operating Spasm, that is, by the means of

### Warm Bathing.

This was a practice frequent amongst the Greeks and Romans, and was employed as well in fevers as for cleanliness and convenience. What however were the precise circumstances or particular administrations of this remedy we are entirely ignorant of. We learn from Prosper Alpinus that the Turks, who use it much, employ it in fevers, but this practice seems not to be founded on any regular principles but rather is loose and undetermined. In Modern times it was unknown as a remedy except in the form



form of a Pediluvium, till Dr Gilchrist of Dusseldorf first introduced the practice into this Island. The facts however that he has given us in favour of it's efficacy though few are thoroughly satisfactory, and in certain cases of Febrile Physicians admit it's utility. In it's execution it is attended with difficulty arising from some circumstances in the patients themselves; A sick person, for instance is unable to bear an erect posture as is necessary for the Bathing and dry rubbing that must attend it. From these inconveniences the practice of immersing the whole body is entirely omitted, and the practice of vapour baths might very justly supercede. As the fomentation however of the lower extremities has been attended with such great success we may be the less solicitous as to other methods of administration, and the chief rule here to <sup>be</sup> observed is to disturb the patient as little as possible. Another rule to be observed is that great care should be taken to wring out the <sup>very dry</sup> cloths, and keep them in as due degree of heat, and any moisture of the bed cloaths is by all means particularly to be avoided. As to the continuance of the Application I have



have observed that nothing under an hour has been attended with good effects, and this period ought always to be exceeded. The first application, and even a continuance of it for some time, may not be productive of any sensible effects, and at any rate it is not a practice to finish the solution of a fever, it may however relieve urgent symptoms, and put the disease under a different train.

If the operation is applied when the Deathosis Phlogistica is considerably abated or entirely gone, in this case the application of Heat is attended with perfect safety; when we can consider the disease as subsisting by the Atonia & Spasm being accompanied with all the symptoms of Debility, then the Application of heat may remove the Atonia, and proving a Stimulus to the System in general may take off the Spasm. It is of great service when we discover unusual irritation & determination to the brain, as in the case of Delirium, stupor, subsultus, a small weak & irregular pulse, in such cases the practice of bathing, by stimulating the extreme vessels is fitted to take off the Atonia and Spasm, and to remove every source of Irritation from the Brain, whether we consider that



that Organ as partly of the Nervous and partly of the Sanguiferous System.

Fomentation frequently induces Sleep, in consequence of which there is always a remission of the fever, it produces a sweat over the body but mostly confined to the lower extremities, and this like every other practice of sweating is very uncertain & ambiguous. When this sweating is increased the patient often becomes uneasy, with all the symptoms of heat & great Irritation, and this is commonly a consequence of the too early use of fomentation, before the Diathesis Phlogistica is sufficiently abated. From the whole therefore we conclude that Bleeding and warm bathing act by restoring the Action of the extreme vessels to remove the Spasm.

Our **II** Indication is to obviate any excess of Sedative power, and to obviate that debility with which all fevers are accompanied. This debility is our particular care, but how debility should affect the source of all our motions, the Sensorium itself, and how this is removed is difficult to explain; it is chiefly effected however by the increased action of the Heart & Arteries, which means nature has employed for the purpose, and which obviates Debility



Debility. Whether however this increased impetus  
 operates by a direct action on the Sensorium, or  
 by taking off the Spasm subsisting in the extreme  
 vessels themselves, is a matter involved in un-  
 certainty. In the case of fever, the obviating the  
 debility of the Sanguiferous System is a suf-  
 ficient object of our attention. — As we referred  
 an impetus auctus to an increase of Tone in the  
 System, so we may refer Debility to a di-  
 minution of this tone, whether we consider it as  
 diminished in the Sensorium or not. A loss of  
 tone in the Arterial System evidently takes place  
 from the observation of certain diseases. In the  
 Dissections of the Plague at Marseilles the tone  
 of the heart was found to be so far lost as to  
 be dilated to an unusual size, & the Arteries  
 towards the extremities were every where un-  
 commonly distended. This may be referred to  
 an increased impetus, but is by no means satis-  
 factory, a more probable cause indeed of a pu-  
 trid dissolution of the blood accompanied with  
 a great loss of tone, and these two circumstances  
 taken together afford us a sufficient solution.  
 The loss of Tone then in the Arterial System seems  
 sufficiently



sufficiently evident, and to this the Debility may be imputed. Our remedies to recover this tone either by a direct action on the Arteries themselves or on the Nervous System may be reduced to four heads.

- I. The Application of Cold.
- II. The Use of Tonic Medicines.
- III. Stimulant Medicines, partly operating on the Arterial and partly on the Nervous.
- IV. Antispasmodics or such as operate solely on the Nervous System.

### I. Cold.

This when applied to the body in a certain degree or manner that is more or less transitory, (for the continued application of Cold will have different effects) and removed again immediately, or applied to a small part of the System for a continuance, so that the generating power can soon overcome its effects and hence make them transitory. In either of these cases it makes the part red, a mark of Increased Action, and hence it follows that Cold is capable of exciting the Action of the extreme vessels. Its effects may be extended so as to affect the whole System, and it



it is a common cause of Phlogistic Diathesis. So far we may see the Noxious effects of Cold, but this *Potentia nocens* in different constitutions of the System proves an useful remedy, and by different circumstances either in the application in the System itself all these *Potentia nocentes* are convertible into Remedies.

Where the tone of the System is increased, as in a Phlogistic Diathesis, Cold may be hurtful. But in a Nervous or putrid fever where there is a loss of tone Cold may be extremely useful.

### Manner of Applying Cold.

It may be applied two ways,

1. Cold Drink taken into the stomach. Such will cause an Inflammatory Diathesis in one case, or obviate Debility in another.

2. Cold may be applied to the external surface of the Body.

### 1. Cold Drink,

Is an instinct we are led to in all cases of fever, so much so that it is only Art could have introduced the contrary. It has been a question in fevers whether Hot or Cold drinks were to be employed. It is not to be established by collating Authorities, as



as we have great ones on both sides, but in fact we cannot make use of either, because they have both taken a party. They render absolute what should be only conditional. I would observe that warm drink is a safe practice but never a powerful remedy. On the other hand cold drink is often a powerful remedy; It is to be treated with much caution - All that has been said of it amounts to this that it may be resolved into the general properties just delivered of cold in general.

I say that cold is capable of producing the Diathesis Phlogistica, and is the cause of the particular Phlegmasia, hence in all Inflammatory fevers the use of cold drinks may be hurtful. This all the Antients observed, and Galen, who cured by Bleeding and cold drinks, observes that in Inflammatory fevers it is attended with danger. Celsus tells us of cold drink as a valuable remedy, yet points out these exceptions, "sed in his tamon quibus nullus dolor, nullus pulmonum tumor, non Thoracis, neque Ulcus Pulmonis," Book III, Sect. 2. Chap. 7. I must also point out to you Serilli's notes on Symplicius's works, where there are much the same exceptions. When fevers are of an Ambiguous nature



nature, as in Cold seasons & Climates and all ven-  
 mal fevers, Cold drinks are to be suspected, so  
 where there may be Inflammatory Diathesis,  
 and in the beginning of all fevers. Thus you see  
 why warm drinks are mostly employed in this  
 Country.

But because this same Cold is capable of restor-  
 ing the tone of the <sup>arterial</sup> System, in all pure Nervous fe-  
 vers and in putrid fevers it is an useful and a  
 necessary remedy, since in warm seasons and cli-  
 mates and in most autumnal fevers it is safe &  
 useful, and so of most of the advanced states of fe-  
 vers, where there is no topical affection (which  
 is always Inflammatory with respect to the part)  
 where they are admissable, here it may be to ob-  
 viate debility, and support the evacuations of the  
 System.

There is a choice of times that makes it a remedy  
 still more to be depended upon. The most obvious  
 example is that it is a practice of most Southern  
 Countries to give moderate draughts of cold  
 water, which give often a final solution of the  
 disease. See Cleggorn on this Subject, and Riveri-  
 us.

The



The source of all this is taken from the Antients and not only in Intermittents but in Continued fevers when at their height, Cold water may be thrown in to give a final solution to the disease. See Celsus again. This practice modern Practitioners have lost in the cold climates. See Lomius in his Treatise on fevers, Sect. 3. 2. & 3. Chapters are on this subject. You will meet with some doubtful matters and some exceptions. See also the Modern Neapolitan Practitioners, Serilli, Lavi, Cratzanki, &c.

The practice in Continued and Intermittents is to excite a plentiful sweat and terminate the disease. But the Italian Physicians only want to use it as a *Dieta Aquea* as they call it. This remedy has in this country too been <sup>found</sup> useful and important. See Smith's Common water, Hanwick's *febrifugum magnum*. But I believe they all err in endeavouring to render it too general in this country where Inflammatory fevers prevail so much.

## 2. The Application of Cold to the External surface of the Body

The Application of Cold to the external surface of the body, or Cold bathing, was a practice  
little



little known to the Ancients; Galen indeed mentions it as admissible, but is totally silent as to the principles on which it depends; there are few instances in the former practice of physic in which it was under the conduct of Art. Cerrilli in his notes on Stmuller takes notice of the partial application of Cold, and he frequently in the violence of the hot fit applied Towels dipt in water to the pit of the Stomach. Haller, one of the first restorers of the Hippocratic doctrine in France, in his 2<sup>d</sup> Book de febribus, advises the bathing the extremities in cold water, and also recommends the Mouth to be washed and the Genitals to be frequently wetted by applications of the same. In the Eastern parts of Europe it has been frequently practiced, and in the Acta Medica Curiosorum we find that Dr John Godfrey De Hahn at Breslaw frequently washed the bodies of his patients in cold water with considerable success; he even practiced it upon himself in an illness that Sauvages has with great accuracy described. His brother at Schwednitz has published a dissertation expressly upon the subject, and the plan has been adopted by the neighbouring



ing Countries, and is now commonly used in  
 Cordent and petechial fevers.

All Cold must operate in restoring the tone of  
 the Arterial System, and by determining to the  
 surface agreeable to the operation of every tran-  
 -sitory and moderate application of Cold; its use  
 therefore in the removal of Spasm is evident, &  
 hence the propriety of its application in fevers  
 where no phlogistic Diathesis prevails, particu-  
 -larly in the Nervous & Putrid. With regard to the  
 time and manner of its application, my former  
 Observations on Cold will be sufficient.

II. My second head of remedies are  
Tonics, or such as strengthen the Tone of  
 the Muscular fibre, and are therefore of the  
 highest utility in preventing Atonia. These are  
 of different kinds, partly Fossil and partly  
Vegetable.

### Fossil.

The Chemists have pretended to find in Copper &  
 Iron a Sulphur Anodyne of Vitriol, which they  
 affirmed to be a Tonic, efficacious in Fever &  
 Delirium arising from Debility & Atonia. The  
 use of Copper in Epilepsy, where a Spasmodic  
 affection



affection prevails is undoubted, and if Copper can prevent the return of these fits it is an Argument for their tonic effects in fevers. The same Chemists have recommended the use of Arsenic in Intermittents, and Dr. Jacobi has published a Treatise with many instances of it's efficacy in that disease. I believe the fact is incontestible that Intermittents have been cured by Arsenic, and in this Mineral a Metallic poison is prevalent that in many cases acts strongly as a Sedative & hence as a Tonic, the generallity or perhaps the whole of Sedatives acting as Tonics. If we are to place any confidence in the effects of Saccharum Saturni of Professor Rundermarch (which is one of our most Astringent Sedatives and powerful Tonics) it will be decisive, that the Astringent and Tonic powers of remedies are efficacious in fevers.

The Vegetable Tonics have been much more frequently employed, and of these nearly the whole class of Astringents, Gall in particular, about 60 years ago was much employed. The most noted however of all the Vegetable Tonics is the Peruvian Bark, which is more potent than



than any Vegetable, and safer than any Fossil Medicine, to this object then I shall confine myself.

The Peruvian Bark has been much the subject of dispute among Physicians, whose reasonings have been contradictory to each other, some allowing it to <sup>have</sup> excellent effects, and others denying it to have any. For my own part I shall not take up your attention in the discussion of the dispute, but shall proceed to give a System of my own, formed on principles, & confirmed by experience.

My fundamental supposition with respect to the Peruvian Bark is, that it acts solely on the Nervous System and not on the fluids, and its effects are not to be imputed to any change it produces in these. In proof of this I shall mention a singular fact—A proper dose of the bark, given a quarter of an hour before the accession of the Paroxysm, will prevent the coming on of the disease. In this case it must be evident that there is no time for this medicine, which is of very slow solution, to be converted into the mass of blood and there act as an Antiseptic.

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It may be said that it is lodged in the Stomach and there allowed to operate, but if we consider that the disease itself depends only on the Nervous System, and that Tear can bring on the Paroxysm of an Intermittent, or can oppose it's accession, we shall see that any effects it has on our fluids is merely by the intervention of the nervous system. This opinion however seems to be now given up, and Pringle from the suddenness of it's operation thinks it can be only referred to the Nervous System, and from it's effects in Gangrenes it must be evident that the quantity taken in is insufficient to affect the circulating fluids. By the Intervention of the Stomach alone it is probable it acts as a tonic by obviating the debility and atonia that caused fever. It's operation in this way is confirmed by the similar effects of so many other Medicines that act only as Tonics. That it acts in this way is also confirmed by Intermittents, which neither in their cause nor in their method of cure depend on the circulating fluids; for this I refer you to Van Swieten, who has endeavoured to maintain that the cause of Intermittents is



to be found in a certain state of the Nervous System and to that our method of Cure must be directed.

The Bark has been found to be hurtful whenever the tone of the Arterial System is increased, as in all Inflammatory diseases, and where the tone is only temporarily and not habitually increased and hence to be avoided in the Paroxysm of every fever. We find it to be of use where the tone is considerably weakened, and a Septic or Sedative power prevails, and this is an exception to the last observation of it's being universally hurtful in the warm fit of fever, for where the Septic power has been long prevalent and the fever has spun out to an extraordinary length, the Bark, as removing the Atonia of the vessels, may be useful.

This doctrine of the Tonic power of the Bark is further confirmed by it's efficacy in Gangrenes. I observed that our fluids have perpetually a tendency to the putrefactive state, which is prevented or retarded by their being kept in constant motion, and this state can only take place when our fluids are stagnating; Stagnations however, whether in the vessels themselves, or from obstructions into



into the Interstices of parts can hardly occur; but when the tone of the vessels is lost, and the more putrid effusions where the red globules are extravasated, must always depend on an excessive degree of Atonia; of this I before gave proofs, that the ferment occasioning putrescency first operates by destroying the tone of the vessels.

The cases of Putrefaction that may occur are different in different degrees of Intensity, and we shall enumerate two cases.

The first are only of a certain degree of Subtlety, and only destroy the tone of the neighbouring vessels.

The second consist of a vapour of such immense subtlety and penetration as immediately to affect the whole Nervous System, and consequently to put a finishing period to our existence.

This then is our distinction of Gangrene & Sphacelus, the former spreads slowly, but the actual Sphacelus, except by the extirpation of the part is irrecoverable. The Gangrene is only stopped by increasing the Tone in the neighbouring parts by exciting Inflammation in those, in consequence of which a purulent effusion is formed that separates the



the corrupt from the sound part. The stoppage of Gangrene then depends on increasing the tone of the neighbouring vessels that are connected with the purulent discharge, and as the Bark is known to increase the tone of the System, it may contribute to excite the same Diathesis Phlogistica in the neighbouring vessels, by which effect alone a Gangrene may be cured, and the whole must be resolved into the power of the Bark in increasing the tone of the Arterial System.

Physicians, before the Bark was discovered, employed Tonics and Stimulants, whose effects must be referred to the same operation. Bark therefore we find increases the Tone of the System, for it can both aggravate it when already begun, and restore it when greatly diminished.

— Now to employ this in the cure of Intermittents.

From the whole train of Reasoning we alledge that after the Solution of any fit, independent of the causes first producing it, the body is left under a state of Debility, which increases towards the return of the period, and is only obviated by increasing the tone of the System, and every remedy employed can be explained on this footing. Among  
all



all these I admit the Bark to be one of the most powerful means for obtaining this end, and it will from hence be easy to perceive what is the proper time for its exhibition. In every hot fit the action of the Arterial System for the time is increased & the proper time of application must be in the Premission; till lately the Bark has been confined solely to the cure of Intermittents, few esteeming it admissible in Remittents, and these few have administered it with caution and hesitation. Experience however has confirmed its utility to be more extensive, and we now not only employ it in Remittents, but in fevers of the most continued kind; for the hot fit of a continued fever may be destitute of Phlogistic Diathesis or any other cause of increased tone, and may frequently subsist with Atonia and debility in the Arterial System; here therefore the Bark as a roborant may be highly useful, and where these circumstances are distinctly observed, it is applicable, be the form ever so continued. The facts of Morton and Torti are not admissible on this subject, as their practice was confined to Intermittents, and the quantity



of Bark employed even by Heccham & Pringle was much too small to be of service; they only exhibited three drams of the bark in two pounds of water. Dr De Haen at Vienna is the first who has established the practice of the Bark in Continent fevers on a proper foundation. I refer you to Vol. 3. - Pag. 366 of his ratio medendi, where he has summed up the result of his practice in so many Corollaries.

From the whole then it appears that whenever there is debility, accompanied with Atonia, the Bark may be successfully administered. In the beginning of a Disease when the tone of the System is commonly increased we must be cautious of using it, but in the decline where a debility is evident & there is no topical determination it may be safely exhibited. The Bark is now no more to be esteemed as a Specific, since we can ascertain its operation as a Tonic, and this is exactly consistent with the whole doctrine of Fever we have delivered. Physicians, while they rested the Bark on the footing of a Specific, were unable to account for its efficacy in Gangrenes. Before I dismiss this subject I must examine a question with respect



respect to the Theory of its operation: At present  
 we have only ascertained its Tonic power, and  
 now we shall proceed to examine upon what  
 qualities in the substance does this property be-  
 long. Astringents we know have been employ-  
 ed for the cure of fever, but they are far inferior  
 to the Bark which is a more powerful Tonic  
 than any Astringent whatever; the Bark there-  
 fore must have other qualities. We discover a  
 Bitter in the Bark, and all Bitters are found  
 to be remarkable tonics and were generally  
 employed in fever, in so much that Dr Pitcairn  
 asserted Intermittents were as readily cured  
 by chamomile flowers as by the Bark. The  
 Bitter therefore of the Bark has a great share  
 in its tonic power; but how do the Bitters  
 operate as Tonics? Not by their Astringent  
 power, for this is not observable in many; nor  
 by their Antiseptic, for they, like the Bark,  
 have neither time nor opportunity to act on  
 our fluids. If we give up the Astringent and  
 Antiseptic powers, how must we explain  
 their action? In Bitters a certain Narcotic  
 quality prevails which to many Animals  
 is



is a powerful poison, and this may operate in the Bark, as in Opium, in preventing the recurrence of fever. The long continued use of Bitters are capable of destroying the tone of the System altogether, but of this we shall afterwards treat.

### Rules for giving the Bark.

It is necessary to employ it in large quantities, and this rule may be given in common to every Medicine that only perhaps is efficacious when given in a sufficient dose. In this Country I have experienced that nothing under six drams or an ounce is sufficient to prevent the paroxysm of an Intermittent, and the same in Continued fevers; it may be exhibited in larger doses than has been commonly imagined, and we have instances of two ounces being taken into the Stomach without inconvenience, & I have given myself half an ounce at a dose without inconvenience, and the larger the dose the more certain are the effects. When the Stomach however is not in a condition to bear large Doses we must divide them into smaller, and repeat them as soon after each other as possible. In the Quartan Fever we



we have a Premission of two or three days for the Administration of the Bark. If we give an ounce in one day it may prevent the recurrence of the fit, but if we take a greater length of time, as two days, we shall be disappointed of the effect.

Whenever we are obliged to divide the dose we must bring the exhibitions as near as possible to each other. If we are in expectation of the Paroxysm at midnight and give the Bark in the morning it will not be near so effectual as if we began in the afternoon and proceeded till the Accession of the fit.

The Bark is most effectual when given in substance, and this method I esteem to be preferable either to the extract or decoction. The difficulty of exhibiting it in substance chiefly arises from its nauseating taste, which must if possible be remedied, the Taste of it in the Mouth and Fauces is frequently more apt to render it nauseous than any operation it may have on the Stomach, for which reason I should prefer Wine for a Vehicle, in which regard should be paid that it is perfectly diluted, or, in preference to



to this I would perhaps advise it to be enclosed in a wafer in the form of a Bolus.

Next to the Powder in substance I prefer the Extract, and much depends on the manner of the process, any extract whether of water or spirit may be effectual, and it is perhaps best first to diffuse it in Brandy & afterwards in water, or rather to steep it in brandy and distill off the Ardent Spirit.

Next to these is the Decoction, which in itself is weak, but may be made stronger by the addition of such a quantity of the spiritous tincture as the patient can bear. The decoction is liable to affect the Stomach from the quantity of water in which it is diluted. Dr. Baen filters his Decoction twice, and thereby rids it of those parts that are not perfectly dissolved, and this is attended with less inconvenience to the Stomach than the other. Some patients however are unable to take the Bark in any form, and to such it must be applied in the form of a Glyster, observing to give a much larger dose than when given by the mouth, and the extract must be employed here. The Bark is so far from being constantly an Astringent that it is frequently purgative



purgative, and when this occurs it is apt to fail in the cure of Intermittents. Dr. Mead however asserts it to be never efficacious but when it purges, which opinion may be in some measure reconciled if we consider that congestions in the abdominal viscera take place in Intermittents, and till such are removed the disease will continue to be obstinate. I believe however that in general it is necessary to avoid the purgative quality of the Bark by adding a small quantity of Opium to it. I have suspected that Physicians have depended too much on the Bark, for we have certainly many excellent substitutes that, in a scarcity of Bark, have proved efficacious. Our bitters & astringents may be employed, the former of which are preferable. Gentian cures Intermittents almost as certainly as the Bark, but it is attended with one inconvenience, that it is purgative, and therefore to render the remedy safe, we must unite a Bitter & an Astringent together, which gives us the quality of the Bark.

III. Our third head of Remedies are such as obviate Debility, and increase the tone of the System.



System, such are Stimulants, and these we call Direct Stimulants or such Medicines as excite the Action of the part to which they are applied, and communicate the Phlogistic Diathesis to the System. In the Antiphlogistic Regimen it is an universal rule to avoid direct stimuli, but to this we shall find some exceptions. I have mentioned two cases in which they may be employed with advantage. Heat we know to be the most Inflammatory Stimulus we have, yet it is applicable, as is evident in warm bathing where the relaxation it produces on the surface fully compensates for its stimulant effects. Blisters are very strong Stimuli, but as they stimulate the surface more than any other parts, and remove the Spasm in consequence of the relaxation they induce there; this sufficiently compensates for their Stimulant qualities. Where the System is in a state of Atonia the direct stimuli may be safely employed, and Physicians, during the age of Alexipharmacs, often employed them with success. The cases however wherein they are requisite are ambiguous and not distinctly marked, (and



and from the promiscuous, indiscriminate & too early use of them they have often been abused in practice. I before alledged that Stimuli were only admissable when accompanied with an Antispasmodic power; this I believe will apply universally, but it is by no means satisfactorily proven, as many seem to be direct stimuli where we cannot perceive an Antispasmodic quality. The Stimulants formerly were very numerous in the Materia Medica, but are now considerably reduced. I shall confine myself to two or three,

1. *Radix Contrayerva*. This is a Medicine of weak virtues, but fashion and prejudice have given it more merit than it justly deserves; it is frequently combined with other remedies, as with Absorbents, and if ever they prove Sudorific I should rather impute this effect to the absorbent combined with it.

2.<sup>d</sup> is the *Serpentarium*. This is a powerful and very Acid medicine, but as I have not had any opportunity of ascertaining it's use, I shall refer you for it's virtues, to Sir John Pringle. I shall not make mention of the rest, at present



present it is universally agreed, that the most safe as well as the most effectual is Wine, the Theory of which is not perfectly clear, but its effects are probably owing to its anodyne and Antispasmodic power, but in the ordinary administration of it, if it acts only by its sedative quality, it can do no more than Opium, but we must chiefly consider it as acting by its Stimulus. Sir John Pringle in his 356 Par: says there are two cases of delirium, one arising from debility the other from increased impetus. In the first Wine is the best remedy, and many have been recovered from the lowest state of fever by the use of Wine; but when the delirium arises from increased impetus, the eyes look wild, the voice is quick, and there are the strongest appearances of a Phrenitis, in this case Wine and Stimulants were found to aggravate the Symptoms. When fevers arise from Contagion and are accompanied with no Inflammatory Symptoms, then Wine may be used. In the use of Wine we are to be determined by the patient's way of life. If he has not been much accustomed to Wine a small quantity will prove sufficiently Stimulating, but if he



he has we may give Wine liberally and very early in the disease, more especially if the patient has a craving for it. Wherever the Symptoms are ambiguous the weaker wines should be used, and the freer they are from any mixture of Brandy they are proportionably less Stimulant; hence the Claret & French wines are, preferable to the Portuguese. We generally dilute the Wine into Negus, or make it into a posset, the latter however is a mawkish liquor that scarce ever proves critical, and the former disagreeable to the Stomach, ~~wherefore~~ a small quantity of plain cold wine is most refreshing; or, if diluted, cold water is better than warm, and wherever Wine is proper to be given, cold water may be safely prescribed.

#### IV. Antispasmodics.

The Modus Operandi of these is difficult to explain. They have a Stimulant & Sedative power combined, and all the Medicines under this head are found to have a mixt and even opposite operation.

In Opium, which is the chief and most powerful of these remedies, we have a combination of



a Stimulant & Sedative power, and the Stimulant power may either be considered as a reaction of the system in consequence of the Sedative, or as a direct Stimulant power; from this double quality however a difficulty arises, in ascertaining their proper use in fevers. Opium is certainly hurtful in all Inflammatory diseases, & from its too early use has been much abused. Dr Tralles has taken considerable pains to prove that Opium is universally hurtful in fever, but his objections are manifestly drawn from a few instances, and his reasonings are in general ill founded. He sets out with the supposition of a Lensor obstructing the Capillary vessels being the foundation of fever; he proposes ten queries in order to determine the bad effects that opium must produce in fevers, but he is unable to separate fever & inflammation which with him are Synonymous; but it is obvious that instead of the tone of the Arteries being increased they are often diminished and sometimes nearly lost. It may indeed increase the Inflammatory state and be hurtful by its Stimulus, but we frequently



frequently find it necessary to restore this state and use Bark and Cold water for that purpose, and wherever a direct Stimulus is requisite Opium may be employed, and whenever Wine is admissible Opium is equally so.

Opium may be useful in fevers by its Sedative power, and this may obviate every Irritation that is not Inflammatory. Dr Haller has raised doubts with respect to the power of Opium on the heart and circulating system, but he has been ~~the~~ sufficiently answered by Dr Whist who has sufficiently established the fact. Given in a moderate dose it only acts as a Stimulus & excites the action of the heart, but in a larger dose it proves Sedative. The brain may be under an excess of Excitement independent of any increased impetus of the blood, and this excitement is frequently unequal, as in Mania which arises from an inequality in the excitement, in which state the patient is for several days deprived of Sleep & is insensible to almost every impression, and this occurs when the action of the heart is calm and placid & there can be no suspicion of any increased impetus of



of the Blood. Thus then there should be a maniacal delirium in fevers, different from the Phrenitic, which depends on Inflammation, and such a delirium I have seen relieved by Opium from which it is evident that it cannot depend on any Inflammatory state of the Brain. — Dr Lind in his Appendix to the diseases of Europeans in Hot Climates says that from long experience he has found Opium to be good in the hot fit of Intermitents where it obviates the Spasm and increases the Sweat by a relaxation of the Arteries. In general he says it does not answer in delirium, but such I suppose to have arose with Inflammatory tendency. Here then we have a case where Opium is serviceable, even when there is an appearance of an increased impetus, and Opium may be employed with success in some cases of continued fevers.

Whenever the Cause of Fever is a powerful Septic that is sudden in its operation, and where a sudden solution of the disease is requisite Opium may be employed. I always was accustomed to refrain the exhibition of Dover's powder till large bleedings had preceded, but this delicacy I  
now



now find to be unnecessary, for moderate bleedings are sufficient, and then Dover's powder may be exhibited even though the pulse should be a little hard and full. — So far then our fear of employing Opium in Inflammatory fevers may be pushed too far. At Vienna they employ Opium very freely, and De Haen has frequently exhibited three ounces of Diacodium in a day, and Dr Sydenham repeats Opium with great freedom in a Delirium attending the Small pox, and Dr Stork has often given it to Peripneumonies.

Having then endeavoured to clear up the difficulties attending the exhibition & operation of Opium we proceed to Camphor, a medicine of great uncertainty. In 100 instances in which I have tried it I can hardly determine whether its effects are good or prejudicial. In the Experiments of the Society at Bologna, it appears to have a strong Narcotic quality, and to prove poisonous to most Animals. In those that did not die a Comatose Sleep & Sweat came on. Its Sedative power however does not occasion such a reaction as that of Opium, and hence it has been supposed to be Refrigerant, particularly as



it has no effect in accelerating the pulse. As it is a medicine we are very little acquainted with, we should be cautious in the use of it. I once gave two grains to a patient to whom it had like to have proved fatal, yet have frequently given it from one grain to half a dram without observing any effect it had, so that its salutary and hurtful effects are not well ascertained. I am apt to think it seems fitted to the Maniacal state of fever, in which it accordingly has been employed with advantage. It is generally given when from Debility, *Subsultus Tendinum* &c in fevers a peculiar irritation of the Brain is suspected. I am persuaded that it ought to be given in larger doses than is generally given. I should imagine that it ought to be given in doses of one Scruple or more. If we do not give it in larger doses it ought to be repeated at shorter intervals.

**Musk.** For the introduction of this into Medicine we are indebted to Dr Wall of Worcester. It is a remedy that is extremely powerful when pure, but in consequence of its being so much adulterated



adulterated we can never be certain of its effects. It induces Sleep and allays irritations, but in its use all the cautions relative to the exhibition of Opium are requisite. Its Antispasmodic power is supposed to be peculiarly strong, and has, like Camphor, been made use of in Subultus & Deliriums that are not phrenitic; but whether it is preferable to Opium, on account of its being less Stimulant, experience has not yet ascertained.

**Oleum Animale.** The utility of this has been confirmed by many successful experiments in Germany. It is certainly a most powerful remedy to the Nervous System, and may on experience be found to be extremely useful.

**Castor** has little Sedative or Antispasmodic power, and may generally be considered as a hurtful Stimulant.

**Volatile Alkali** is a very powerful Stimulant, being by far the most diffusible and extensive of any yet known. It is inflammatory, and, applied to the Cutis, excites Inflammation. Its topical effects are but inconsiderable, as it so quickly diffuses itself in the System, and it



is safe from its being transitory & liable to neutralization in the Stomach. It is a noted Antispasmodic, and perhaps has a Sedative power combined with its Stimulant. It is the most convenient of all the simple Stimuli among which it might have been ranked, it is very transitory, and if it happens to be prejudicial its effects soon pass off. It is certainly to be esteemed next in degree to Wine, and the practice of Pringle is beneficial in giving Wine and Volatile Alkali alternately, — the Wine becoming Acid takes off the Stimulus of the Alkali. Sir John Pringle alludes its Antiseptic power to be great, but this on our System is impossible, as its stimulus prevents such a quantity being taken as would be sufficient to produce the effect. Dr Rusham conceived it to be a dangerous remedy, it, according to him, having a peculiar power of putrifying and dissolving the Crasis of the blood; this he explains on the old notion of the Alkali being septic. Dr Monro explains it on the supposition of its stimulus increasing the circulation and hence putrefaction, but this would



would never be the case if we applied it in proper time & quantity.

### III. To obviate the effects of a Septic tendency.

This putrefactive tendency may be obviated

1. By avoiding the Remote causes and other means of encreasing the Septic tendency.
2. By evacuating as soon as possible whatever is introduced into the body of a Septic nature.
3. We obviate their effects by Antiseptic powers applied.
4. By tonic medicines applied.

First. By avoiding the continued or reapplication of the Remote causes, which first introduced the Septic tendency, and obviating the other means of encreasing it as already introduced. For this purpose,

a, We must avoid the places filled with noxious effluvia, whether Marshy or Human Miasmata. From Dr Lind we learn the use of his floating hospital. In many cases this is done by shifting the present situation and getting upon higher ground, and if near the sea coast remove out to sea in a ship. So Sir John Pringle observes that unless



unless Patients are removed from the Hospital, where they caught the Infection it is difficult nay almost impossible to cure them.

c. By avoiding the accumulation and retention of the patient's own effluvia.

The soundest persons by having their effluvia retained, as they are kept in Goals, may produce this poison; but this will be more readily effected when the effluvia has been already subjected to a fermentation of this kind.

Hence we should take care that our patients be not shut up in Alcoves, tent beds &c., but that the Curtains be left open and motion given to the patient's air around him. If it stagnates the ordinary effects of ~~old~~ do not take place in common: if we shift the air about the patient it will be better. Thus Sydenham says the Windows should be open if the curtains are shut; but upon shutting the windows open the curtains.

The Bed Linens should be frequently shifted and changed, contrary to the common received notion. There is the utmost safety in shifting a patient's <sup>body</sup> ~~bed~~ and bed linen even in the most profuse



profuse Sweat; the only caution is that we should dry them well, as without this they may do mischief.

In Dysenteric cases we must immediately remove the Stools and so of the other excretions.

c. We obviate the means of putrefaction by evacuating these fluids that may be supposed to be a putrid fomes, viz, the contents of the Alimentary Canal. Where any fluids are effused and in any degree stagnating there they put on immediately signs of Putrefaction, where heat, air, &c, are applied as in the alimentary canal. The Bile is supposed to be more especially liable to this fermentation; but I believe more has been said of its putrid tendency than is well founded; however one & all of them are liable to become putrid; and hence this is the use of frequent purgatives in all febrile & putrid fevers.

d. We obviate putrefaction by avoiding all excess of Stimulating powers

I was hinting just now that our fluids were prevented from Putrefaction in so far as they are kept in motion; but this motion cannot be increased without increasing the heat of the body, and in  
so



so far as this is done the Putrefactive tendency is increased. Hence all means of avoiding Stimulant powers are necessary to avoid putrefaction.

These are the several means of avoiding the Remote Causes &c; and we now come to the Second. To evacuate the matter introduced or generated in the system as quick as possible. We know the chief means are the several Evacuations or excretions nature has constantly provided for carrying off this matter. How it is done by Diluents I have formerly explained: hence all means of washing & bathing the external surface may be of use.

It is said it may be done by the use of Sweating. Under certain profuse Sweats there is more evacuated than by the other ways: but the carrying out a ferment diffused over the whole system requires a great length of time. Hence it is a question whether we carry out more by means of interpolated sweats than by uniform perspiration. Sanctorius found more was done by the latter than the former means. I think Sweating is



ing is more useful by relaxing the Spasm on the surface than by throwing out Morbific matter.

Third. By means of Antiseptic powers.

a. Cold applied to the extent the body allows of is one of the most powerful means of checking the putrescent nature of our fluids.

b. Another is plentiful dilution. all the substances that act upon one another, or on the animal body require a certain degree of concentration.

If Antimony, in a very small quantity, acts on our Stomachs, We obviate these effects by diffusion.

c. By introducing Aliments that have a less tendency to putrefaction.

This is by introducing vegetable aliment.

d. By vegetables of the Acrescent kind. These Acrescents by forming a part of the Animal fluids do obviate the effects of the putrefaction. These two purposes are obtained by means of vegetable Acid, and very commonly by means of the Fossil Acid, which act not on the mass of Blood, (for they are too much diffused) but, as the putrefaction is so much in the *primæ viæ*, by obviating what occurs there much service may be done. —

e. The



e. The same may be obviated by many of the neutral Salts. From Sir John Pringle's Experiments many of them cannot reach beyond the *Prima Via* so that if they are antiseptic on the body it is  
 α by correcting the putrefaction in the *prima via*,  
 β. by their refrigerating power diminishing the putrefactive process.

γ. By being Stimulant to the excretories & thus carrying off the putrescent matter. Under this head I might mention bitters, antiseptics &c; which are all by Experiment shown to be antiseptic. But they cannot be introduced into the System in sufficient quantity to act any other wise than as just mentioned.

Fourth. By Tonics we chiefly obviate its effects. I have treated this subject when on *Cortex Peruvianus*; but I shall consider the matter more fully now, and the effects of Putridity in the Animal Body.

The



The fluids of the Animal body are in a constant progress and tendency towards Putrefaction, and this would often proceed to a noxious degree if the Economy did not provide some means of regulating & constantly obviating it.

The means are

1. To preserve most of our fluids, these being the most septic, in constant motion. It is certain that certain matters must be evolved and again re-absorbed before putrefaction can take place; if therefore in putrefaction or any other fermentation these effluvia be blown off, the process stops.

2. Nature has every where provided in the body certain Outlets, in consequence of which there is a constant evacuation of such matters as proceed further towards putrefaction.

3. By the constant substitution of such Aliment which has less of a septic tendency. In these ways the Animal body rids itself constantly of putrescent matters, and hence putrescency seldom rises to a noxious degree. These functions not only preserve the body from putrefaction but obviate it when it is introduced, and if ever



so large a quantity of putrescent matter is introduced, the Economy frees itself without any harm. In the Scurvy from the constant introduction (introduction) of putrid matter every part of the solids and fluids are tainted, yet if we substitute any Aliment of a different kind we shall find that the Economy by supporting its usual exertions will quickly throw out the putrescency. Perhaps it may be suspected that more is owing to the new matter which as Antiseptic<sup>it</sup> must be supposed to correct; a good deal however is owing to the evacuation, for in many cases where the Saline & Putrescent matters are taken in in large quantities we find if the excretories evacuate copiously no Scurvy appears - as in the Torrid Zone where the perspiration is freely kept up by the heat of the climate; this is a demonstration of the power of the Economy in ridding itself of noxious matters. In fevers it is no less obvious, for nature rids itself of the putrescent or morbid matter. In the Plague a ferment is evidently introduced, and this is increased & accumulated by its own fermentative powers in the body. This is carried off by the eruption of Buboes, but all the



the matter can never be supposed to be collected in these glands, surely in very inconsiderable part; the greatest quantity being thrown out by the ordinary perspiration, and if the cause of the disease is removed, the Economy soon rids itself of the putrid matter.

The System I have delivered relative to the cure of Fevers is different from that of every Author, for these universally rest the cure of Fever on the Assimilation, Decoction, & Expulsion of the Morbific matter; this I have not at all taken notice of, I have only mentioned the Evacuation of putrid matter but not as a general means of curing fever; but as I have imputed fever to a Morbific matter introduced to Miasmata & Contagion, it may be asked how I dispose of this matter if I don't admit of the Common doctrine of Concoction &c? I say that there are many cases of fever without the least suspicion of matter introduced, and where cold alone is capable of producing fever there can be no suspicion of a morbid matter or in such as arise purely from fear and other passions; these however perhaps seldom produce fever, but when

Miasmata



Miasmata or contagion concur; & I alledge that Miasmata may be like other poisons that act only by the first impression, & tho' contained in the body produce no further action. In the Small pox a small quantity of matter produces the Eruptive fever, on the subsidence of which the disease is at an end, and if this fever has a proper termination there will be no renewal, tho' the body is often drenched with a prodigious quantity of the morbid matter, and as most of it is lodged in the skin the greatest part must be evacuated by the ordinary course of perspiration, and long after the recovery a quantity is evacuated which is still contagious, but does not again produce a fever in the same person.

There is a practice in the East Indies of opening the pustules as soon as they are formed, but the pustule fills again notwithstanding, and this is practiced six or seven times in the progress of the disease. Contagions then operate only by the first impression, for the ordinary evacuations will in due time carry them off, and on this footing I give myself no trouble about evacuating the morbid matter, which is an operation natural



natural to the Economy; but on the supposition of a morbid matter in the System renewing the disease its action must be referred to the Nervous System, and by obviating this state of the Nervous System we remove the disease. I conclude this chiefly from the action of the Bark in Intermittents by which a paroxysm is stop'd as effectually in one day as in seven.

Albertini maintains that the bark does not cure Intermittents without some evacuation of Morbid matter; but if we can prevent the operation of the matter, Nature will of itself dispose of that which is already taken in.

The application may be easily extended to all fevers, whether you take the action of Contagion from impression or from some circumstances in the Economy that are constantly recurring. In either case if we obviate the state of the Nervous System Nature will of itself evacuate the matter. - As to the doctrine of Assimilation, Concoction &c. it is little else than mere language inexpressive of any thing; they have given no rational account of such Assimilation or Concoction, and are unable to condescend on the particular quality of the morbid matter



matter, nor by what means it operates - the whole  
 seems to be founded on an analogy of another  
 operation. In Aliment there is an Assimilation  
 taking place, but the effects of this have been  
 too far extended, and we shall find that they may  
 be extremely limited. - There are two matters,  
 Sugar & Oil, that are the foundations of our  
 whole Alimentary substance, and on these alone  
 has the System any power of Assimilation. With  
 respect to other substances we have innumerable  
 instances of their passing out of the System un-  
 altered and unchanged. The power of Assimilation  
 does not extend beyond the substances I speak of,  
 and why we should suppose an Assimilation of  
 Morbific matter I am at a loss to conceive; but  
 it is by no means proved to take place in fact,  
 and is a mere hypothesis, no one can alledge  
 that the Morbific matter is introduced and suf-  
 fers such and such changes in particular parts  
 of the System, but many instances may be produc-  
 ed to demonstrate in what parts it is not chang-  
 ed. Physicians have spoke much of Coagulation  
 & repulsion in the small pox, but these are not  
 found to exist, for Contagions are perfectly the  
 same



same in the passage from the body as in their first introduction. When the Contagion first comes out it is strongly possessed of the power of communicating the Infection, and from its continuance in the body, no apparent alteration is made, it is not rendered more salutary, for as long as the smallest particle remains about the furniture or clothes it is capable of communicating the disease; the Morbific matter is analogous to common Salt, which passes by the excreta unaassimilated.

The means of obviating putrescency depend on the power of the Economy, the putrefaction readily passes out of the System, by the excretories that Nature has provided for the transmission of all noxious matter, and whatever kind of putrid matter is introduced no mischief arises whilst the usual excretions are supported in a due degree, and a more natural food is substituted for the support of the body. Putrescency only takes place when the usual excretions are stopped up, or when the fluids are thrown out of the circulation and left to stagnate in particular parts of the Body. If our food all together



together consists of Saline & Putrid matter, yet if no Moist Air arises to generate Miasmata we shall be free from the Scurvy &

The cases of Putrescency that occur in our System may be reduced to two,

1. Where it is generated in the body itself.
2. As Arising from a ferment introduced.

The first never shews itself in a considerable degree, but chiefly depends on an Atony of the vessels & is productive of the anasarca &c.

A second case in which it shews itself is in Inflammation, which is in consequence of Attonia, because from the Application of Narcotics and Astringents, or from the operation of cold concurring, a Gangrene is especially produced and succeeds the Inflammation. The Gangrene I refer to a loss of tone, and a putrefaction of the fluids in consequence of Stagnation.

With respect to ferments they may be possessed of such Activity, or may be introduced in such quantity, or by a multiplication of the original quantity, by an union with our fluids, they may so far operate as to destroy the condition or  
crasis



crasis of the fluids, but putrescency would not be a consequence of their introduction if they did not by a primary operation destroy the tone of the Solids and give occasion to effusions and stagnations. In the plague at Marseilles I mentioned the loss of tone that was evident in the heart & Arterial System, which laid the foundation for all the other consequences; this might be illustrated by the consideration of the quick destruction of our solid parts, from a putrid taint of the fluids. This brings me to the head of Tonics, which are to be set down among the remedies of the present Indication. The chief of these are Cold & the Bark, the latter is applicable in every instance of great debility, and Experience teaches us that it is particularly useful in Ptochial fevers and such other signs of Putrefaction. Even Sir John Pringle, who has a great partiality, from his Experiments, to the Antiseptic powers of Remedies, says, however, that the Operation of the Bark is so quick as to render it suspicious, that it's Febrifuge is different from it's Antiseptic power.

Having finished the general Cure of Fevers, I leave you to compare it with those Dogmatical ones



ones of Boerhaave, Stahl, & Hoffman, Senac &  
 ; also with the Impirics, as Lieutaud, over  
 whom, at least, without vanity, we may claim a  
 superiority. He is confused in his Impiricism &  
 imperfect; his Theory, which, contrary to his pro-  
 fessions, he is perpetually attempting, is ridiculous  
 weak & useless.

I propose now to point out the more particu-  
 lar application of the remedies we have mentioned,  
 by giving you particular cases. This I shall  
 have especially in view with respect to continued  
 fevers, and shall premise something concerning  
 Intermittents, endeavouring to bring the reme-  
 dies into one view.

The cure of Intermittents is rather prophylactic  
 than curatory. An Intermittent consists of many  
 repeated paroxysms, and as long as these parox-  
 ysms recur we alledge the patient to be under  
 disease; but more strictly the disease is removed  
 at every paroxysm only the Laëtes continues. —  
 Most of our remedies are directed to prevent the  
 recurrence of paroxysms. These are in general

1. Such as are employed in Interstials.
2. Such as are employed in the Paroxysm.

First



First, are such as operate insensibly - 2.<sup>d</sup> Are such as operate obviously by inducing somewhat of a hot fit.

1. Those that operate insensibly are what have been called *Specifics*, that is such whose operation only appears by the effects, viz, by the removal of the fit; if any merit this title it is the Peruvian Bark.

2. Such as do not shew a very sensible operation, but are not to be considered as specifics, as we are acquainted with their general operation on the system, & observe their effects in preventing the recurrence correspondent to their general character. These are the tonics which are especially applicable to the Theory of Spasm, or of Spasm & Debility, as the former must be referred to ~~the~~ Atonia. These Tonics are

A. Astringents.

a. Fossil.

b. Vegetable.

Fossil. — Iron. The Acidule vitrioli is used in America and many parts of Europe. Copper in Vitriol acts as a tonic, but may operate also as an Emetic. Arsenic



Arsenic, as appears from Jacobi, is a Tonic.

Allum is well known.

Vegetable. — Peruvian Bark.

Oak Bark, Mistletoe, Tormentill, Linguefoil, & a variety of others have been employed. Astringents have generally been united with aromatics or bitters, as Allum & Nutmeg, the combination however of Bitters has been most frequent. To this head I refer the Peruvian Bark & also the Ash bark. The Hypocastanum has been much celebrated in Europe, but is not very effectual. Dr Cartheuser, in speaking against the specific power of Bark, says, that Bitters and Astringents combined cure Intermittents equally well; and he quotes too, who alledges that in America the Tormentill and other Astringents are used. But the pure bitters alone have been employed with success, as Tonics, in other diseases, and therefore we refer their cure of Intermittents to this power with reason; The objections against this have the less weight because Authors do not follow Mr Cartheuser's advice who alledges the trial is unfair if the doses exhibited are not so large as those of the Peruvian Bark. Many bitters & narcotics have



have been employed, as Bay leaves, Peach kernels, and bitter Almonds.

We know the deleterious effects of the Lauraceras' kernel, and also that Bitter Almonds are a violent poison to dogs. Opium too is well known to cure Intermittents, how Sedatives & Narcotics act as Tonics we cannot say, but they evidently prevent the return of Spasmodic motions, and remove them when present; Brandy also has nearly the same effect. Charms & Incantations appear ridiculous, but may have some foundation, for the attention of mind, especially if under awe, will prevent the recurrence of Spasmodic motions; thus fear often prevents the Chincough, and Dr Willis proposes to put a Child under a Mill Clapper; Epilepsy & Hysteria have often too by this means been prevented. A Gentleman prevented the Accession of an Intermittent by indulging the Venereal appetite whenever he found the fit coming on. Any thing also which determines to the extreme vessels, prevents the paroxysm, which depends on a constriction of these, hence Neutral Salts, Emetics, Exercise, warm bathing, which two last were practiced



practiced by the Antients. To this head also I might refer the *Dieta Aquea* of the Italians, and the various *Epithemata* or *Unctions* applied to the *Spina Dorsi*. The *Epithemata* are generally stimulant and create blisters, and all these in proportion as they produce sweat are most effectual. Another practice is by *Sudorifics*, but these are ambiguous, for if they do not entirely remove the *Intermittent*, they change it more to the *Continued* form, and hence *Sweats* have been excited by the most gentle means, as merely putting the patient to bed, and bathing him with warm water; but these not being efficacious, *Aromatics* have been used, but, if they are not decisive, are dangerous. *Neutrals* are better; but preferable to these is a *Neutral* combined with *Opium*, and the *Sweating Regimen*.

II. We come to those *Remedies* that are employed during the *paroxysm*.

1. Such as prevent a further fit from being formed.
2. Such as shorten the solution of the fit.

As to the first, I have pointed out *Emetics* & *Neutrals*, which being given at first prevent any further *paroxysm*. (2. The



2. The same remedies employed in the hot fit to expedite the Solution. Opiates have been used by Dr Lind with great success; they remove the spasm as appears from the Headach & other spasmodic symptoms being relieved. Purgings has been taken notice of as a remedy, but we know in general that Intermittents are often aggravated or brought back by Evacuations, Purgings therefore must be considered in a different view. Crudities in the Stomach very often occasion the recurrence of Intermittents as arising from raw vegetables, fish, cream &c, and more especially those arising from the disease itself, as Acid bile, and in such cases Purgatives are useful.

The Remedies employed during the Paroxysms are not so often final as those which are given in the Interval. Purgings may be useful in two views.

1. On the supposition of a more than ordinary afflux of fluids into the Intestines, the Bile &c, which become putrid in consequence of Stagnation in the alimentary canal, and hence are to be evacuated.

2. Where the Secretion is nearly or totally diminished, and the determination is confined to the Abdominal



minial viscera, hence arise congestions in the system of the Vena portarum, Spleen, Liver, &c. Such congestions lengthen out Intermittents, and it is by removing these that we can alone account for the good effects of purging in Intermittents. But while purges remove these noxious causes it is equally certain that considerable purging will produce the same effects, as a debilitating power; it therefore should be as gentle as possible.

Bleeding. I would use here the words of Dr Boerhaave, "venesection nocet per se semper," &c. vid. Aphorism 762. In vernal Intermittents it is use and very often necessary, from more or less of Inflammatory Symptoms. In Summer & in the Fall it should never be used, except where the fever begins as a continued, and the Constitution of the patient is robust.

Diet must be regulated in the same way. The Antients not only enjoined a tenuis & exacta Dieta, but almost a total abstinence; but as the disease evidently depends on debility such a practice is hazardous.

Quartans baffle often all our remedies, and from the rareness of their occurrence in this Country



country I have little experience of them; I rather refer you to Senac. He says that some Quartans cannot be cured but by Bleeding, and often require the exacta dieta; he does not however mark the circumstances of the cases which require this singular practice. We might also speak of the Anomalous or irregular Tertians so frequent in warm climates, but for this I refer to the Authors on the subject, Torti, Morton, Clegborn, &c.

We shall now proceed to apply our general doctrine to Cases of continued fevers.

I shall do this by giving particular Cases and marking their particular circumstances. — These cases are of three kinds as they respect different states of the disease.

1. The approach of Fever.
2. The time of a more evident & formal attack of the disease.
3. When the disease is already formed.

I.<sup>st</sup> You might here expect I was to enter into the whole Prophylaxis of Fever. Ours shall consist of two parts.

1. To prevent the application of the cause of the disease.
2. When the cause is already introduced, but has not



not gone the length of producing a formal attack.

1.<sup>st</sup> I reserve for the article of the Plague when I shall have occasion to say every thing that relates to contagions of every kind.

2.<sup>nd</sup> When the cause is applied, introduced, & in some measure, operating on our System; it is distinguished by much lassitude, sluggishness, & aversion to motion, a greater difficulty in the operations of the the Body — combined with these there is a loss of appetite, an unusual sensibility to the cold of the Air. Want of Vivacity in the Eyes & Countenance, Disturbed & Interrupted sleep.

These are Symptoms by which in a general contagion we have no doubt of the approaching disease; and even in all cases it gives suspicion. A person with these Symptoms should be confined to his chamber. There is now a great sensibility to cold; a person in the open air will be exposed to considerable vicissitudes; he should avoid these not only by keeping at home; but at home he should avoid all cold air. Many circumstances occur within doors of this nature, such as streams of cold air from doors windows &c, which altho' we resist under exercise abroad we do not so well at home when at rest.

Avoid



Avoid all Exercise & fatigue either of Body or Mind. When the System is any ways weakened Exercise is liable to produce fatigue. A person in this condition would do well to <sup>lie in</sup> bed as the safest way of avoiding Cold; but it should ~~not~~ be without much bed clothes.

About these parts of Regimen there arises little doubt. — But when all such circumstances occur; a loss of appetite generally in a few days produces, a cridity in the *prima via*, often attended with a disposition to vomit, <sup>which we should favour,</sup> Moderate doses of tepid liquors and of Neutral salts may also be given. In this way we learn from Sir John Pringle that a moderate sweat will entirely prevent the disease. In such a case a person ought to be content with a moderate sweat long continued, and be confined in bed 48 hours being the whole time of a tertian period, and after the sweat a quantity of Peruvian Bark may be given. When we have taken the pains we speak of all marks of debility may be obviated by the Bark.

This treatment is particularly directed to the approach of a Nervous fever; but we must add that it is equally proper where we can discern the approach of an Inflammatory fever more properly. When, with the circumstances we have mentioned, <sup>these</sup>



there are also Catarrhal & Coryzal Symptoms, they may be obviated by the same management as the other; but the heat of the body, bed &c, must be more studied. - So much for the ~~the~~ first case.

II.<sup>nd</sup> Case, when a cold fit and <sup>actual</sup> shivering is come on, and is soon succeeded by fullness & frequency of pulse, headach &c. In the case upon the supposition of a continued fever, every thing may be done as in the cold fit of an Intermittent, and the use of vomiting is particularly to be insisted upon; which would be the most efficacious means of obviating and putting an end to the disease. This formation of diseases subsists longer than we imagine: we must not suspect the formation to be over when only a full and frequent Pulse is present and the shiverings return and intermiser themselves. Nothing is more dangerous than immediately to run to Bleeding when we find the pulse a little full and frequent. Dr Lind says Bleeding used before the vomit is useless: this may be because it is applied in the beginning of the disease whilst a state of Atonia subsists. With regard to what is to be done further, whenever I can be present at the beginning to exhibit the vomit, it should be with the consequences mentioned formerly



merly. To promote sweat give neutrals, nay we may even go the length of giving opiates, and therefore a cold fit once formed then is the time to cut short the progress of the fever by Dr Morgan's sudorific course. Keeping the body in a tepor & catenae warmth for 40 hours is necessary, or even for the second return of a Tertian period. If a Tertian commonly comes on about Noon, in all such cases I would take care to extend our regimen to the 3<sup>d</sup> day. — Whilst we keep the patient in this heat let us take care no unusual Irritation be applied.

I would observe another circumstance. So long as we can suppose the disease forming, unless the Symptoms of Inflammation are most certainly evident, Bleeding is to be avoided, especially if the Sweating course is to be used.

III<sup>d</sup> Case, relates to the disease already formed. I must suppose here that 12 hours have passed from the pointed attack of the Cold fit. This head branches into many varieties.

1. A person has, towards Evening, with other preludes of an approaching disease, been affected with Sensibility to Cold, with slight shiverings; Or, going to bed, he becomes warm to an unusual degree and does not



not go to sleep or else it is disturbed. In the morning he finds a considerable lassitude; no inclination to get up or go about his business; he has a clammy mouth and tongue, or a disagreeable taste; some degree of thirst. Pulse unusually frequent but moderate to about 80 or 90 in a minute, but neither full nor hard. This is a case of formed fever, but with moderate symptoms. The first disease is uncertain. — The first question is, what may be necessary to take off the excess of Stimulant powers which always occur in the beginning of the disease? The most effectual means is Bleeding. Should we bleed here or not? I say, No, because the future disease is uncertain; it may turn out to be a nervous or putrid fever.

If we should expect only a simple Inflammatory fever, neither then either is there occasion for Bleeding. It is so mild that we may let it go on. The Antiphlogistic Regimen in all its circumstances should be employed. The patient should not be exposed to light or noise. Be at rest, avoid all motion especially speaking. Take care that the primæ viæ are under no disorder; so that a Vomit or a Glyster or both may be necessary. Diluents may be plentifully used



used to obviate any acrimony in our fluids. — The Dieta Aquea should be united which may prove a Cure.

Even in these circumstances might not some degree of Sweating be employed? When there is some presumption of Sweating coming on or it's being an Inflammatory disease sweating may be hurtful. But my hesitation here proceeds from a want of particular Experience.

2. Suppose the attack in the evening is not so much a slight chilliness as a cold fit, and the chilliness very remarkable; the night passed without sleep, a considerable head ach; the thirst more considerable; the pulse more frequent, above 100, with some degree of head ach; I will not say but a Synochus may begin in this manner, but there is no doubt but a large Bleeding is here admissible and proper.

3. A third case is still without the proper marks of Nervous fever; more violent than the first, and more moderate than the second case.

Every part of the Antiphlogistic Regimen is here necessary. The question alone is how far Bleeding is necessary? Merely from the Symptoms as I have put them there is no determining whether Bleeding be proper or not; but it is to be determined by some other



other circumstances. When there is no suspicion of a Contagion neither from an Epidemic prevailing nor from the patients having been exposed to such. But if it appears that cold has been the remote cause from its occurring during the winter and Spring seasons, or if symptoms have proceeded that indicate a Catarrhal affection, and if we join here a robust constitution that has been subject to Hemorrhages; if there be a great cough; flying pain about the Thorax, or Rheumatic pains affecting different parts of the body, then Bleeding is necessary.

But with the circumstances I first mentioned there may be combined such as will prohibit the use of Bleeding or make us use much caution with it. As if we know that the disease has any thing of a contagious nature. Or if we know that a Contagion is Epidemic, and if we consider how much it adheres to clothes, especially if they occur in the Summer or Autumnal seasons when there has been no cold, no Catarrhal symptoms. In these cases Bleeding will be doubtful which will be increased if the patient be not full nor vigorous nor used to Bleeding nor to Hemorrhagic affections, especially if we know from the



the prevailing Epidemic that the disease is to be attended with debility in it's advanced state.

**IV.<sup>th</sup>** Case, different from all the foregoing. There the disease is Inflammatory. Here are different circumstances. In the time of an Epidemic contagion, whether it be a Typhus or a Putrid fever produced with suspicion of actual contagion communicated, propagated with slowness, and symptoms of debility for some days preceding. When the formal attack is obscure & gradual, when for some days there is a little remission in the morning after a restless night, Tongue soft and moist, pulse frequent; (In the most distinctly characterized <sup>Nervous</sup> fevers, the pulse is more frequent than in strong Inflammatory fevers) There occurs more a confusion than a pain of the head. The patient loses his strength even before the formal attack of the fever; he cannot stand &c. Every effort to motion is attended with Tremor; thus in the hands it is especially conspicuous. If with this defection of mind a disposition to Nausea, want of appetite & Vomiting are joined, these are the characters of a Nervous fever.

This can be applied not only to the second day of the disease, but to several days. — Here we cannot



cannot admit of Bloodletting. Sir John Bringle & some others observe that they admit of one Bleeding. I do not know what the robust habit of a Soldier may do, but it is a rare exception to a general rule to the contrary. The application of Cold often concurs, & there are often Catarrhal Symptoms combined, and even here in this case I have seen Bleeding prove hurtful. — This case then does not admit of Bleeding.

V.<sup>th</sup> Case. Suppose in a warm climate, about the end of Summer, Remittent fevers occur with the utmost violence of hot fit and chill suddenly, in these warm climates. They here often Bleed once; but from collecting the Observations of practitioners I am convinced that this arises from our prejudice to the European practice; for from Experience we find that in less than 24 hours a Remission is to occur, which we are to cure by the Bark. And even when Intermittents are attended by Peripneumony &c, they are cured by Cort. Peruv; first emptying the stomach of Bile &c.

I now go on to a set of cases in a more advanced state of the disease.

I.<sup>st</sup> Case has occurred to me very frequently. — I suppose the symptoms as in the third case, Inflammation



Inflammation neither high nor low; I suppose Bleeding has been employed, Belly opened by Glysters, Vomits & a Saline mixture given, and immediately a Sweat has appeared.

The prejudice for Sweating in this country is very great, and they often encourage it by clothes heaped up, warm drinks poured in &c. I find that after two or three days the symptoms of hot fit not only continue but increase, and I have frequently found this when the Sweat was neither free nor fluid, and chiefly about the face and upper part of the body, & the Patient and the practitioner hoped for a solution of the disease by this means, and thought that Bleeding by moderating this Sweat would be hurtful. But we now know that these Sweats always aggravate the disease. Stop then and take off the Sweats; take off the additional Bed clothes. Take out by degrees the patient's hands & arms; employ no Neutral salts, but Acids; take away warm drinks. This is absolutely necessary and some hours must be elapsed after the Sweating before you can judge of the Indications. It may then come under our third Case (Sect. I.) and treat it accordingly.

II<sup>nd</sup> Case. On the fourth day where Vomits have been



employed. The pulse above 100, and the Inflammatory state continues with head ach anxiety and want of sleep; here Bleeding even on the 5<sup>th</sup> day is to be repeated; and the Diathesis Phlogistica still subsisting Bleeding is still the remedy.

But only suppose the Symptoms to be of the Inflammatory kind a little abated, and no particular evidence of Inflammatory Symptoms, a Synochus may be the disease, and Debility at the end of two or three days more is to ensue. What are we to do in this case? We are to be guided by the circumstances attending the first Bleeding - as if there be any supposition from the appearance of the Blood of an Inflammatory affection. The pulse appears upon the former Bleeding as if relieved and becomes fuller. Here it is well, but some constitutions in the fiercest vigour will not bear four ounces to be drawn without fainting, and I know some people who bear each successive Bleeding better and better. This peculiarity should be enquired into.

I must now return to Cases of the 2<sup>d</sup> day of the disease. Whether any <sup>other</sup> evacuation is to be used to take off the Stimulating power.

Purging is the one practitioners have noticed.



I here abstract from the Remittent, Intermittent, and Bilious fevers of warm climates. In some continued fevers of the putrid & petechial kind Purging may be useful; But in merely Inflammatory fevers is purging to be used to take off the stimulating power? I have not employed them for this purpose. Together with diminishing the tone of the System they take off the determination to the surface. Thus Dr Sydenham in Angina seems to depend little upon them. Sir John Pringle on this subject says, if the body be bound, it should be opened by some lenient Physic. He finds it sufficient to prevent Costiveness by Glysters, and this, last is one of the best and most general Rules in Fevers. As a means of taking off the Stimulant power I do not think Purging is so proper.

S. In the second day after Bleeding and opening the Belly, What is necessary to take off the Spasm of the Extreme vessels? Diluents are to be employed. Whether in this second day may Sweating be attempted? I have given you the ordinary practice. From the circumstance of ordinary Sweats being mischievous, that they have been avoided in this country. Sir John Pringle never attempts it but in the very formation of the Nervous and Hoal Fever.



I say it is doubtful however; it should never be tried by the Heating Inflammatory Stimuli. But as far as Emetics, Neutrals, & Opates may procure it, it may be a frequent practice. A query arises, whether that Sweating excited, by Celsus, by means of Cold water, may not be a safe practice? Applied whilst the Inflammatory Symptoms are present it may do harm. With a view to take off the Spasm in the beginning of Fevers it may be employed, and then Tartar Emetic is the best & most proper remedy that is after Bleeding and cleansing the *prima via*. It is especially to be practiced during the first days of the disease, and except the disease be of the Phlegmasia it is undoubtedly proper it be given at first without success, I expect the loss of it. In the more advanced states if we can procure a remission by the means of it will admit a practice we shall speak of hereafter.

**S.** On the fourth or fifth days; suppose all the practice exhausted; Bleeding pushed as far as prudent; Vomiting, Tartar Emetic & used, and the disease continues in an Inflammatory state, what is to be done? The common practice here is to apply a Blister immediately. If the fever be without topical,



topical determination but still with Inflammatory Symptoms, and where the Antiphlogistic Regimen is absolutely necessary. Here even the temporary Stimulus of a Blister may be hurtful, and thus I have hesitated in thus immediately applying a Blister. But here if the disease depends on a Spasm which the Blister will take off, the sooner the better. It is true that Blisters are safe in many Inflammatory diseases their Stimulus is inconsiderable. They are safe when applied in cases of topical Inflammation. — What ever doubts may arise it appears from Experiments on this subject, in diseases of the pure Inflammatory kind without topical affection, the stimulus may and does do harm. See page 70 of Aenid.

S. On the fourth day. Suppose a fever that began with Inflammatory Symptoms, and these have continued to the fourth or fifth day, at the same time Bleeding has been once employed and it has been (right or wrong) thought improper to proceed to a second. The Antiphlogistic Regimen has been attended to, Tartar Emetic has been employed with little success, What is to be done? for something must be done. The common Routine is to have recourse to Blisters whether proper or not. I must put the supposition that the fever



fever is without topical determination, and is in an Inflammatory state that may be irritated by any stimulus whether designedly or artificially applied. This may give a caution if on the other hand it has been employed with success.

I own that in Inflammatory diseases their stimulus is often safe. Their safety is especially when it is employed near the part affected where it may compensate for its stimulus. — To bring the matter to a conclusion, in Fevers purely Inflammatory without topical affection, they may & do do harm, and for this I quoted Dr Lind. I might have quoted Rusham too, but am loath to do it because he goes on false reasonings. — Sir John Pringle seems to be very favourable to Blisters in Inflammatory fevers (134) but he expresses himself with such ambiguity that it may admit of the same conclusion that we draw. There is a doubt as long as the fever is between the Inflammatory and Nervous. Their application is best when the Inflammatory Diathesis is gone and only the Spasm of the proper fever remains. There is one other consideration which is also of weight. The duration of fevers is sometimes determined. Sir John Pringle says you are not to expect



expect a Remission of the local fever till the 14<sup>th</sup> day, or the day of the Crisis. It is hence imprudent to preoccupy these parts of the Body on which you are principally to depend in the advanced state of the disease. — I own in urgent cases, the application of a Blister to the same part may be repeated.

**S.** In a pure nervous fever this dispute is unnecessary. The Blister may be applied very early in the disease; see Dr Lind for their application in putrid and nervous fevers.

But suppose the disease is a Synochus. — When it changes its form what are the measures to be pursued? The change of a Synocha into a Typhus is not very easily determined, i. e. when all Evacuatives are forbid and when Stimulants are the remedies,

We must judge from,

1. The state of the Pulse. In the first and second week, increasing in frequency, first from the 7<sup>th</sup> or 8<sup>th</sup> day sinking in fullness and strength.

2. From the Heat. When it falls off or does not go on increasing as in the first days of the disease, as is the Calor Mordax, only felt by pressing the



the fingers more deeply.

3. By the abatement of Thirst. - The tongue is ambiguous. The dryness &c is not excluded from the most pure Nervous Fever. We judge principally from the affection of the Brain; Muror, Drowsiness without Sleep actually taking place; the patient falling into a low muttering delirium. The patient cannot bear to be turned ~~around~~ about, or to be lifted erect.

Subsultus Tendinum &c come on. All these are to be the more regarded according to the length of the disease. If they appear strong on the 7<sup>th</sup> or 8<sup>th</sup> days the disease commonly terminates and that fatally on the 11<sup>th</sup>. When this change from Synocha to Typhus can be perceived there can be no room for Bleeding. In the present circumstance whilst Evacuants were excluded and Tartar Emetic used without success, then Blistering is admissible, and Wine & Volatile Alkali are to be used to obviate debility. Begin with caution and increase the dose pro re nata. As it attacks with more Symptoms of debility or greater affection of the Brain these measures to obviate debility &c are to be more strongly carried on.

§. But if Petechiae at this period appear, with other



other marks of Putrefaction, as Stools from the Nose, Stools very fetid, urine very turbid &c. Then our chief resource is in the use of Cortex Peruvianus. Wine may be joined as introducing an Antiseptic substance into the Blood.

No body will have doubt of the propriety of Bark neither, if the fever has from the beginning been more manifestly of the Nervous kind. Without Direct symptoms of Putrefaction. The Bark may too be employed with the same caution as Wine, in the beginning, afterwards with more confidence.

In fevers that begin as a Synochus may there not be use for Bark? When Dr James gets any considerable remission, even in the first week, he throws in Bark, and cures them sooner by this means than any other practitioner. I am very ready to admit this practice, and nothing but want of observation hinders me from pushing it.

Our Febres Synocha, without art, show considerable remissions in the beginning of the disease, viz, in the fifth or eighth day. Afterwards in the second week those ~~are~~ remissions disappear or are very obscure.

If an Epidemic that we can suspect to be of the remittent



remittent kind, turns out a Nervous fever in the advanced state, it is a question whether we should in these first Remissions use the Bark. It is in the first part we can best use Ipecac Tartar, and after a Remission procured by this means we may throw in the Bark as used by Dr. James.

The same disease as indicates Cort. Peruv. will also indicate Cold Water both internal and external. But its particular and best times of application, in this last case, we, in this country, have not experience enough to discover.

S. Besides putrescency & Debility in the advanced states of fever, there is also another state to be noticed, viz, when there arises marks of a particular irritation of the Brain. Very often they appear suddenly & unexpectedly.

First, When the patient has in his delirium chiefly a confusion of head, & a low muttering, longing to be in silence & darkness; when this changed to one of an impetuous kind, he talks louder & with more rapidity, and it is also with a greater rapidity of thought constantly changing, he becomes insensible and heedless to what is doing about him, or if he does he is easily provoked and constantly desires



desires to get out of bed, and if resisted his passion is liable to arise to fury, and here he seems to recover the strength he had lost before. With this very often the face is flushed, and the Eyes especially—*Subsultus Tendinum*, *Convulsions* &c come on all marks of Irritation in the Brain.

The question that occurs here in practice is, When is it truly Phrenitic? It very often depends upon this—A principal remedy here is, Bleeding with Leeches on the Temples. But from its transitory nature, suddenly receding, and dissection discovering no Inflammatory state of the Brain. I say there is a case like the maniacal cases without Inflammation. Here Blisters to the Head, and the use of Warm Bathing are the remedies; and this last should be used for a due length of time (two hours at least) unless the tranquillity & Sleep of the patient shew that you have done enough.

Camphor  
and Musk } are here especially indicated.—

Musk; from our not being so well acquainted with it, we have not any apprehension of its stimulant power. In large doses it has had good effect.

ff



If we could determine that the delirium is of the Maniacal kind, without considerable head ach, no suffusion of the Eyes, a pale & flacid countenance, and the Symptoms of the Pulse shewing little Inflammation, and when the Tremor and Subsultus are to a considerable degree, in all these cases, Opium is the remedy we can most depend upon. I have seen several cases where it was the effectual remedy, employed in pretty large doses, because small doses of medicines of any kind are of no use in the Maniacal state of fevers.

*Finis Februum.*

End of the Second Volume.



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